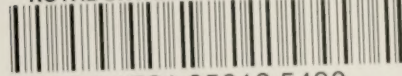


Digitized by the Internet Archive
in 2011 with funding from
University of Toronto



CONTRIBUTIONS OF THE
ROYAL ONTARIO MUSEUM OF ZOOLOGY

No. 21: A FAUNAL INVESTIGATION OF THE SAULT STE.
MARIE REGION, ONTARIO. BY L. L. SNYDER, E. B. S. LOGIER
AND T. B. KURATA

Reprinted from Trans. Roy. Can. Inst. Vol. XXIV, Part 1, 1942

1942

LIBRARY
ROYAL ONTARIO MUSEUM

A FAUNAL INVESTIGATION OF THE SAULT STE. MARIE REGION, ONTARIO

GENERAL INTRODUCTION

Continuing the Museum's programme of surveys of faunally unknown, or inadequately known, areas in Ontario, field work in the Sault Ste. Marie region was accomplished during the summer of 1931. The area investigated lies along the southern border of Algoma District which occupies a central position in our irregularly-shaped province. More exactly, the information presented in the following reports concerns a belt approximately ten miles wide, extending along the North Channel of Lake Huron and the drainage of Lake Superior, starting at Thessalon on the east and thence west and north to Goulais Bay on Lake Superior and including St. Joseph Island and the small Canadian Islands in the St. Joseph Channel (see map).

The Museum's field party at the outset consisted of Messrs. J. Edmonds, E. B. S. Logier, D. A. MacLulich, T. M. Shortt and the writer. We reached the region on June 1, 1931, and after a trial-and-error procedure finally established a headquarters camp in a vacant farmhouse near the St. Joseph Channel and the post-office of MacLennan. Collecting was carried on most extensively within walking distance of this camp but we reconnoitred the larger area, as outlined above, by automobile. On July 3, we were joined by Mr. J. L. Baillie and on July 7, Prof. A. F. Coventry arrived. Work was concluded by the end of July.

DESCRIPTION OF THE AREA

Since this region has received attention from geologists, foresters, etc., there is a considerable literature to which the reader can be referred but a brief descriptive sketch is given here to serve as a background for the presentation of our zoological findings. The area presents certain conspicuous physical features to the visitor who travels through it. Next to the coast of the Great Lakes water system (in detail, the borders of the North Channel of Lake Huron, Lake George, Little Lake George and also the St. Mary River) one travels a somewhat irregular and winding plain. The Great Lakes water level is here about 580 feet above the sea and the plain is not much higher (Thessalon, 656; Desbarats, 595; Sault Ste. Marie, 634). In places the plain narrows somewhat and again it broadens out into a vista of fields or woodland. Occasionally a ridge of rock is crossed, or an island-like prominence is

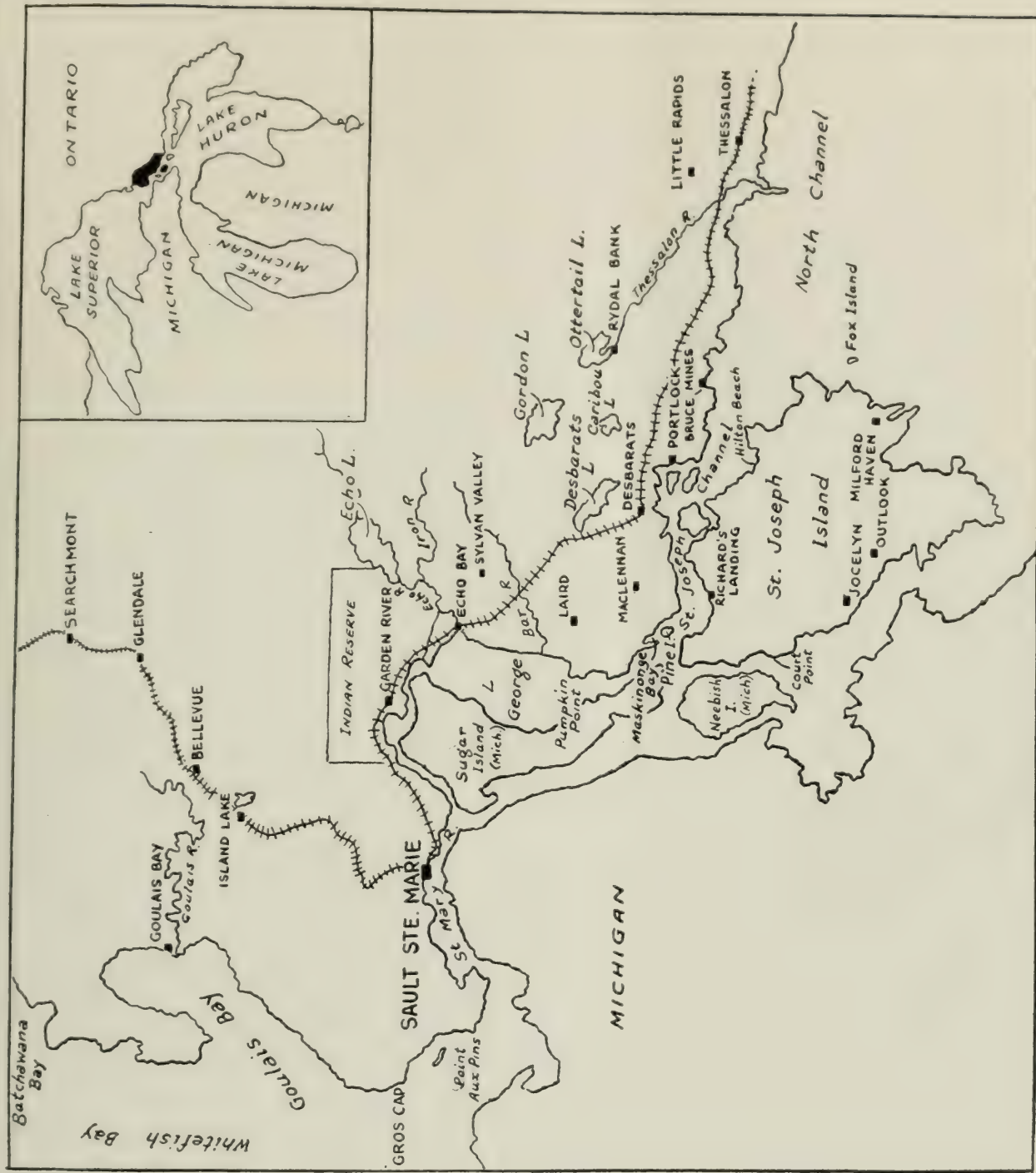
observed to stand out above the flatland. These prominences are projections from, or outliers of, the hard-rock hills which rise up above the plain to the north. To the east, largely outside our area, this formation comes down to, and forms, the coast.

These physical features are seen at a glance because of changes wrought by man. On the plain is a superficial deposit of soil—boulder clay, stratified lake clays and sand—some suited to agriculture; consequently much of the forest has been removed and farms established. These soils are largely glacial deposits, in part levelled by glacial Lake Algonquin and by its successor the Nipissing Great Lakes stage which left its mark in the form of terraces and beaches (Coleman, 1922). Basically the plain is underlain by Palaeozoic rocks—sandstones, shale and conglomerate (Collins, 1925) with an occasional outcropping of Bruce limestone—but the high border of the area (1,000 to 1,350 above the sea, 25 miles inland) and extending far to the north is the Precambrian Shield. If one travels inland he finds that numerous depressions in these hard rocks are filled with glacial drift, or that they serve as catchment basins for numerous rock-rimmed lakes. North of Sault Ste. Marie and extending westward, south of Goulais Bay, a bold granite ridge comes to the very shore of Lake Superior and its tip in the mariners' guide, Gros Cap.

FOREST

This region was once heavily forested. Inland on the Canadian shield white pine probably dominated and on the clay soils of the plain, spruce, balsam and hardwood. Merchantable timber has been largely removed since 1870. Second growth stands of the types mentioned now exist but the scars of axe and fire can be seen throughout the area, even against the inland horizon. The largest remaining area of old forest is to be found in the Echo River valley on the Indian Reserve.

Reference to a generalized account of Ontario's forest resources by Sharpe and Brodie (1931) should be made in connection with a consideration of the forest of the Sault Ste. Marie area. (During our field-work casual attention was given to plant life but we were primarily concerned with animal life.) These authors regard the forest of the region as an extension of the Ottawa-Huron forest situated to the east and south. They point out that though there is similarity of species of trees certain differences are apparent. Beech and basswood are absent, or nearly so, in this region, while jack pine is present, thus making a conspicuous difference between the Algoma extension and the Ottawa-Huron forest proper. But in general these forests are similar,



"from the valleys to ridge-tops there is the same domination of conifers in the lower levels and of the tolerant hardwoods on the ridges". In more detail, "in depressions and on the flat lands bordering streams are pure coniferous stands of spruce, mostly black. In well-drained valleys and on the lower slopes is a mixed coniferous stand, composed of white spruce and balsam, with a representation of black spruce, cedar, white pine and white birch. Farther up the slope the hardwood content increases by the occurrence of yellow birch, and a mixed hardwood-softwood stand of white and yellow birch, white spruce, balsam and the occasional white pine extends to the margin of the pure hard maple stands on the upper slopes and ridges." This quotation will suffice to characterize broadly the forest of the area, although we would like to add that hemlock occurs in certain better-drained areas and in some situations it is dominant.

The discovery of a few plants by our field party seem worthy of mention: Along the St. Joseph Channel on rock terrain, Common Juniper (*Juniperus communis* var. *depressa*) was established; at Gros Cap we identified the Salmon Berry (*Rubus parviflorus*); and in hardwood stands near MacLennan, Basswood (*Tilia americana*), Ironwood (*Ostrya virginiana*) and Beech (*Fagus grandifolia*) were recorded, the latter on a single specimen.

For further botanical details the reader is referred to a recent study (Hosie, 1938) of the vegetation of the Batchawana Bay region which lies a few miles north of the area surveyed by us. Although the Sault Ste. Marie region has been altered extensively by man, we found conditions similar to those described by Hosie in his comprehensive and important report.

We should add to our brief description of the Sault Ste. Marie region some comment on industry, settlements and transportation developments. Sault Ste. Marie, a community with a long and interesting history (since 1615), is a modern city with a population of 23,082 (in 1931). It is the site of an important canal past the rapids of the St. Mary River through which passed in 1931, 2,219,567 tons of interlake freight and 20,626 passengers on a total of 3,094 Canadian and United States vessels. The principal industries of the area are steel works and the making of pulp and paper. Agriculture is of local importance only. No other large settlements are found in this region. Of the villages and towns, Thessalon is the largest with a population of 1,632.

The Canadian Pacific Railway traverses the area from the east (Sudbury) to Sault Ste. Marie and the Algoma Central Railway terminates there from the north. Also a good motor highway roughly parallels these railways within the area and many roads and trails serve the

CLIMATE

Some indication of the climate of the region is given by the following statistics for Sault Ste. Marie, Ontario, and Sault Ste. Marie, Michigan as extracted from Hosie (loc. cit.). February is the coldest month with an average temperature (over 20 years) of 12°F. and a minimum average of 2°F. July is the hottest month of the year and has an average temperature of 63.5°F., a maximum average of 74°F. and a minimum average of 53°F. The average date of the last killing frost in spring is May 15 (U.S. side of the St. Mary's River) and the latest killing frost recorded in 33 years is May 29. The first killing frost in the autumn averages September 28 with the earliest on September 5. The above gives an average growing season of 136 days. The annual precipitation at Sault Ste. Marie (Ontario) is 23.58 inches of rain and 97.8 inches of snow, giving a total precipitation of 33.36 inches falling largely in the growing season.



farmland and even penetrate parts of the rugged rock country to the north.

CLIMATE

Some indication of the climate of the region is given by the following statistics for Sault Ste. Marie, Ontario, and Sault Ste. Marie, Michigan, as extracted from Hosie (*loc. cit.*). February is the coldest month with an average temperature (over 20 years) of 12°F. and a minimum average of 53°F. The average date of the last killing frost in spring is May 15 (U.S. side of the St. Mary's River) and the latest killing frost recorded in 33 years is May 29. The first killing frost in the autumn averages September 28 with the earliest on September 5. The above gives an average growing season of 136 days. The annual precipitation at Sault Ste. Marie (Ontario) is 23.58 inches of rain and 97.8 inches of snow, giving a total precipitation of 33.36 inches falling largely in the growing season.

PREVIOUS NATURAL HISTORY INVESTIGATIONS

Although the mammal, bird, reptile and amphibian life of the Sault Ste. Marie region had not been surveyed and these forms catalogued previously, there are a number of reports of a limited nature in the literature. Those which pertain to the subject matter covered by each of the following papers will be cited therein. There is at least one publication which concerns the natural history of the general region but it does not treat of our area extensively. We refer to an early account by L. A. Agassiz (1850) which describes the physical character, vegetation and animal life of the Lake Superior region generally. Specific reference to the Sault Ste. Marie region is to be found therein. Three other papers report entirely, or principally, on animals other than those with which we are dealing. Two are entomological papers which report on forms found in the vicinity of Sault Ste. Marie. The first (Preece, 1924a) concerns sphinx moths; the second (Preece, 1924b) records certain red-underwing moths. The third is that of Williamson (1907) who presented the results of a collecting trip near Sault Ste. Marie. This paper deals with plants, bivalves, crayfishes, reptiles and batrachians, and several groups of insects.

The following citations deal with birds found in the Sault Ste. Marie Region, Ontario, during seasons other than summer and consequently will not be referred to in the bird report: Preece (1923) records a male Cardinal taken near the Goulais Bay-Bellevue Road on November 7, 1923; and Beebe (1933) points out the influence of the upper Great Lakes in concentrating bird migrants in the general region with which

we are concerned. There are of course numerous faunal notes and papers dealing with localities in peninsular Michigan. Most of these will not be cited in the following papers.

L. L. S.

LITERATURE CITED

- AGASSIZ, LOUIS. 1950. Lake Superior: its physical character, vegetation, and animals, compared with those of other and similar regions. Boston.
- BEEBE, RALPH. 1933. Influence of the Great Lakes on the migration of birds. *Wilson Bull.*, 45: 118-121.
- COLEMAN, A. P. 1922. Glacial and post-glacial lakes in Ontario. *University of Toronto Studies, Biol. Ser.*, 21.
- COLLINS, W. H. 1925. North shore of Lake Huron. *Geo. Sur. Can.*, Memoir 143.
- HOSIE, R. C., et al. 1938. Botanical investigations in Batchawana Bay region, Lake Superior (with a catalogue of the vascular plants by T. M. C. Taylor and a study of the mammal population by C. H. D. Clarke). *Nat. Mus. Can. Bull.* 88.
- PREECE, W. H. A. 1923. *Cardinalis cardinalis cardinalis*, The cardinal, taken near Sault Ste. Marie, Ont. *Can. Field-Nat.*, 37: 169.
- PREECE, W. H. A. 1924a. Notes on the Sphingidae of Sault Ste. Marie, Ontario. *Can. Field-Nat.*, 38: 132.
- PREECE, W. H. A. 1924b. Notes on the Catocalinae of Sault Ste. Marie, Ontario. *Can. Field-Nat.*, 38: 170-71.
- SHARPE, J. F. and J. A. BRODIE. 1931. The forest resources of Ontario. *Dept. of Lands and Forests, Ont. For. Br.*
- WILLIAMSON, E. B. 1907. A collecting trip north of Sault Ste. Marie, Ontario. *The Ohio Nat.*, 7: 129-148.

MAMMALS OF THE SAULT STE. MARIE REGION

By L. L. SNYDER

The major portion of our mammal survey, accomplished during the summer of 1931, was conducted by Mr. D. A. MacLulich to whom the Museum's thanks are due. The work was furthered, however, by the valued co-operation of Prof. A. F. Coventry who joined the party on July 7 and remained until the 27th. Our appreciation is here extended to him. In addition co-operation and reciprocal procedure in the field among all members of our party produced considerable data and specimens and therefore thanks are due to Messrs. Baillie, Edmonds, Logier and Shortt. Even Mrs. McSorley, who so ably served as cook, should be acknowledged as the only mammal trapper present who could outwit and produce the remains of a particularly smart *Rattus norvegicus* which frequented our camp site. Although we felt chagrin, the situation was understandable when the fact was divulged that she had used a sample of her culinary art as a lure.

The following annotated list records the occurrence, past and present, of thirty-eight species of mammals within the area surveyed. Twenty-two species listed are substantiated by one or more collected specimens each. No attempt was made to ascertain the relative density of small mammal populations in the various habitats. Trap lines were set in promising situations irrespective of prevailing weather with the simple purpose of producing a catch. Record of 3,900 trap-nights produced approximately a $5\frac{1}{2}$ per cent catch, which conveys a rough idea of the prevalence of small mammals in the region during the summer of 1931. The total number of mammal specimens preserved was 276.

The arrangement of the following list is that of Simpson (1931) down to Families. Miller (1924) has been followed within each Family.

No final opinion has been presented on the racial identity of the specimens collected. Certain average measurements which may be of use in comparative inquiries have been noted. These are in millimetres and grammes. If measurements of males and females have indicated no significant difference between them, they have been averaged together. The symbols used are as follows: L = total length; T = tail length, not including the hair; H.F. = length of hind foot, including claw; Wt. = weight.

Sorex cinereus. CINEREOUS SHREW.—The summer of 1931 was not one marking great abundance of this animal but it was taken regularly throughout the summer. Most specimens were caught at night although one was taken during daytime. The majority secured was taken from

low, wet ground with an overgrowth of alder and willow. The next most frequented habitat was sphagnum-covered ground with an overgrowth of black spruce or white cedar. One specimen was caught on a small sand and mud bar in a stream flowing through a dense old hardwood forest. This trap-line was one of the several set to secure *Sorex palustris*, a species we did not procure during the entire summer. Incidentally, we did not secure specimens of *Microsorex hoyi* either. Both of these shrews were taken by Clarke (1938) only a few miles to the north which indicates that further collecting in the Sault Ste. Marie region will probably produce these species.

Only one of the five females of *S. cinereus* secured was pregnant. This specimen was collected on July 22; there were three embryos.

The average measurements of the seventeen specimens collected are: L. 100.8, T. 40.7, H.F. 11.6, and the average weight of six is 4.

***Sorex fumeus*. SMOKY SHREW.**—Throughout the month of June and until mid-July our trap-lines did not yield the Smoky Shrew and, in 1931, we did not suspect that the range of *fumeus* extended into this part of Ontario. On July 16 the first specimen was taken by Professor Coventry at the foot of a talus slide just within the border of a tall, mixed stand of trees. During the remainder of July four other specimens were secured. All but one were taken either at the original site, or in a similar habitat in the same general locality. The exception, a nursing female, collected near MacLennan on July 25, was secured in a balsam stand remnant in a recently made clearing. Mt. T. M. Shortt saw the animal enter a hole in the ground beneath a brush pile, at dusk. A trap set at the entrance yielded the specimen. It is possible that the distribution of this shrew in the region is sporadic even during years when it is most numerous.

The tail of a male taken on July 20 was conspicuously swollen (3 mm., greatest diameter), a condition assumed to be associated with the mating period. The average measurements of five adult specimens are: L. 110.6, T. 47.6, H.F. 13.3, Wt. 7.2.

***Blarina brevicauda*. MOLE SHREW.**—We did not capture a large number of Mole Shrews during the summer of 1931, but specimens were taken fairly regularly and the species was found to occupy a considerable variety of habitats. They were found in alder-willow-ash flats, alder-Scirpus shores (for which they showed a slight preference according to trapping frequency), old hardwood forests, poplar woods with white spruce undercover, and talus slopes. Moist soil, root tangles and mossy logs fulfilled the requirements for immediate cover. On

two occasions an individual was observed to be active during daytime. The average measurements of nine specimens which appear to have reached sexual maturity are: L. 120.5, T. 27.8, H.F. 15.6 and the average weight of five is 19.7.

Parascalops breweri. HAIRY-TAILED MOLE.—We learned from local residents that a large mole “without a fringe on its nose” occurred in the region. Definite evidence was available in the small collection of mammals of Mr. Arthur Caron of Sault Ste. Marie, in which there is a specimen taken in Korah Township in the fall of 1930. More recently Clarke (1938) reports that as many as fifteen Hairy-tailed Moles were said to have been taken in a city garden in Sault Ste. Marie. Records of this species from contiguous areas to the south (Michigan) have not been found so it would seem that the discovery of this mole in the Sault Ste. Marie region can be regarded as a western extension of its range by more than two hundred miles. The nearest specimen record known to the writer is one in the R.O.M.Z. from Seguin Falls, Parry Sound District, Ontario.

Condylura cristata. STAR-NOSED MOLE.—This mammal was fairly generally known to residents of the region, not for reasons of its conspicuousness but because the curious fringe of fleshy processes about its nose impressed the observer when one was examined in detail. A specimen captured alive on June 22 in Jocelyn Township, St. Joseph Island, by Mr. Logier was secured in low, wet terrain overgrown with scrub willows bordering a small lake. When it was encased in a muslin bag and grasped in the hand one had considerable difficulty in holding it. The great strength of the fore-limbs was most impressive and also it was noticed that its hair, in effect, presented a slippery surface. At no time did the mole attempt to bite one's hand; apparently its most dependable aid in defense was rapid burrowing, unless its acrid gland secretion served it protectively. The odour, which suggested one of vegetable origin, was noticeable while one was handling the animal. Closer inspection with the nose gave the impression that it might well be repellent to carnivores. The odour is still faintly noticeable on the specimen which has been preserved as a dry skin for ten years.

Although this species apparently was not plentiful during the year of our visit, “diggings” attributed to it, were occasionally noted in the field. None was captured in our trap lines though sets were frequently made in suitable situations.

The specimen secured was a male, the measurements of which are as follows: L. 180, T. 75, H.F. 31, Wt. 43.

Myotis lucifugus. LITTLE BROWN BAT.—Although the fortunes of bat collecting did not favour us as regards the variety of forms secured, something approaching an adequate representation of *M. lucifugus* accrued. A local resident, Mr. Henry Reid, discovered a colony of bats located within the roof of his house. By placing a dark bag over the exit in daylight the animals were induced to enter the bag. Thus, on July 10, a total of 64 bats was secured, all of which proved to be of this species. The colony was found to be composed entirely of adult females and young. Thirty-six specimens were preserved as dry skins. There was a rather wide range in size among the young of the colony. The smallest was not much larger in body bulk than a thimble (weight, 2.2 gms.) and still exhibited a prominent umbilicus, while the older ones were but slightly smaller than adults.

During the preparation of specimens the mammary glands of lactating females were observed to be greatly developed and it is of interest to note that these glands occupy a distinctly lateral position, even lapping around to near the mid-dorsal line and occupying a position equidistant from the shoulder and hip. The position of the nipple too was distinctly lateral. No doubt this is a most convenient arrangement both for the young and the adult, when nursing young accompany the parent on aerial excursions.

Although we did not obtain definite evidence of the occurrence of other species of bats, some may occur, such as *Myotis keeni*, *Lasionycteris noctivagans* and *Nycteris borealis*. These species have been recorded by Clarke (1938) from Pancake Bay.

The average measurements of thirteen mature specimens preserved are: L. 90.4, T. 3.5, H.F. 10.3, Ear 12.5, Tragus 5.5, wing-spread 251, Wt. 7.9.

Lepus americanus. VARYING HARE.—Clearing of the land within the area we surveyed has certainly reduced the extent of habitat suited to the Varying Hare. There are still extensive tracts, however, in which it lives. During the summer of 1931, the species was not at a peak of numbers but we noted it regularly, one to three having been recorded on about 25 per cent of the days spent afield. The previous period during which the Varying Hare had been markedly plentiful was about 1924 according to residents. Subsequent reports have shown a numerical peak in the Sault Ste. Marie region during the winter of 1933-34 (MacLulich, 1937).

The first young of the year were observed on June 4. One seen on that date was already about half-grown. The average measurements of two adult specimens preserved are: L. 441, T. 35, H.F. 132.

Marmota monax. WOODCHUCK.—This is one mammal which probably has been favoured by the advent of cultivation and deforestation in the area. It occurs in both dry, rocky clearings and farmland throughout the area. We found it fairly common during the summer of 1931; from one to four were recorded almost daily. On June 12, the writer saw three Woodchucks in close association, not more than five feet separating those farthest apart. This perhaps was a casual, or accidental, assemblage since they were all virtually mature; certainly none was young of the year and the date is too late for courtship visitations.

Of the six specimens preserved, four are obviously young, ranging in length from 411 mm. to 465 mm. The other two are apparently adults. The male measures as follows, L. 525, T. 137, H.F. 77. The measurements of the female are: L. 546, T. 134.5, H.F. 74.

Eutamias minimus. WESTERN CHIPMUNK.—In general the species was distributed throughout the region in 1931 but it showed a preference for certain habitats in some of which it was surprisingly plentiful. The most favoured habitat was about stumps and rail fences surrounding stony pastureland. The next most frequent habitat was among drift wood on sandy beaches, especially those fronting white pine sand plains. It was also found in clearings in the drier forests, especially where there were exposed rocks and scattered stumps and brush. Occasionally the species was seen in second growth poplar-birch stands but it was unusual or absent from heavy or wet forest. These facts suggest that the species is more widespread now than under primeval conditions and that it would extend its range along beaches and through burns and cut-over areas.

During the first three weeks of June, this species was seen less frequently than during the remainder of the summer. This is probably due to the confinement of females during the nursing period of early summer and the later emergence of young from the home nest.

The first young of the year were noted on June 23. A total of thirty-five specimens was preserved, adults and young. Twelve were males and twenty-three were females. No suggestion can be offered concerning the habits of these animals or the methods of collecting which would result in selective capture and account for the nearly two to one ratio of females to males. Two adult females collected were bob-tailed, one (June 23) as a result of a recently-sustained injury. The tail of this species is relatively longer than that of the Eastern Chipmunk. When frightened and while scampering to cover this organ is usually carried straight and upright at a right angle to the body which presents a some-

what ungraceful, even ludicrous appearance. The vocal sound produced by this species is a high-pitched, bird-like "tsip".

The average measurements of five adult males are: L. 205.7, T. 97.9, H.F. 31.1, Wt. 45. The averages of the females collected are: L. 213.8 (eight specimens), T. 100.4 (eight specimens), H.F. 31.9 (ten specimens), Wt. 57 (six specimens).

Tamias striatus. EASTERN CHIPMUNK.—This chipmunk was the commoner of the two species occurring in the region as a whole. It was observed regularly and plentifully throughout the area in a variety of wooded and open habitats. Our notes on habitats indicates its preference for hardwood forests, particularly at their edges and about clearings within, especially the maple-yellow birch, or maple-oak forests. However, the species was collected or observed in second growth birch-poplar, rocky clearings with slash, mixed birch-balsam, and even in moist sphagnum-alder situations.

The number observed daily was fairly consistent throughout the two months of our stay although the largest total (18) was reached on July 15. A relative scarcity in the early summer was not as noticeable with this species as it was with the Western Chipmunk.

According to our observations, the young of the eastern species appeared earlier in the season, the first being noticed on June 13, ten days earlier than young of *E. minimus*.

The collection of specimens secured consists of twelve adults and eight young. The sex ratio of the series of twenty specimens, which was collected without obvious selection, is equal, in the case of both adults and young. A specimen shot July 4 had its cheek-pouches filled with blueberries.

The average measurements of six adult males are: L. 244, T. 102.8, H.F. 35.8, Wt. 97.6. The adult females average as follows: L. 248.4, (five specimens), T. 98.2 (four specimens), H.F. 36.1 (six specimens), Wt. 103.1 (five specimens).

Tamiasciurus hudsonicus. RED SQUIRREL.—With the exception of the Eastern Chipmunk, the Red Squirrel was the most frequently recorded mammal on our daily observation and trapping list. It was observed every day we were in the field. It occurred in forested situations throughout the area. A slight preference for mixed woods was evident but it was found in many types of forest growth, from moist maple-birch to dry jack-red-white pine stands. The earliest date on which young of the year were noted was June 13. On this occasion three young were discovered in a hollow tree open at the base and at the top, a chimney-

shaped bole standing in a hardwood forest. They ran out the top when the writer rapped on the trunk in search of nesting Chimney Swifts. A nursing female taken on July 8 was in worn winter coat. Of the series of fifteen specimens secured, thirteen are adults.

The average measurements of seven males are: L. 313.5, T. 119.8, H.F. 46.8, Wt. 185.2. The average linear measurements of six females are: L. 300.8, T. 121.6, H.F. 46.8 and the average weight of three is 171.3.

Glaucomys sabrinus. NORTHERN FLYING SQUIRREL.—It is difficult to arrive at any estimate of the numerical status of a nocturnal species such as the flying squirrel in summer. Three specimens were secured without special devices which suggests that this animal was not particularly scarce during 1931. One animal was taken from a situation overgrown with white elm, black ash and balsam; another was taken on a dry hillside in a balsam stand; and the third was taken from a damp woods of red maple, balsam and black spruce. Only one of the specimens is adult. It is a male which measures as follows: L. 274, T. 128, H.F. 40, Wt. 72.

Castor canadensis. BEAVER.—Since the area with which we are concerned became settled, the Beaver has not been particularly numerous but it has persisted particularly along the banks and around the islands of the St. Joseph River. One was seen in the river during our stay in the region and fresh beaver cuttings were found. Men who do local trapping in winter informed us that they secure an occasional Beaver but the only evidence of a recent increase in the population of this animal in the region concerns St. Joseph Island. In November of 1932 reports indicated that Beaver had increased; in fact, there were complaints in the press that beaver dams had flooded certain areas resulting in damage to township roads. Strangely enough an identical complaint from the vicinity of Desbarats was published in "Forest and Stream" for November, 1904.

Peromyscus maniculatus. WHITE-FOOTED MOUSE.—Not abundant but found to be fairly common and rather generally distributed through a variety of forest situations during the summer of 1931. Our data suggest that old talus slopes overgrown with moss and sheltered with birch and white pine approached being a favoured habitat of this species although no marked concentration was found there. Other wooded tracts, both damp and dry, were occupied by the White-footed Mouse. We collected about an equal number from balsam-spruce-poplar

woods as from alder-willow-ash-elm overgrowth. Burned-over areas and old camp sites were also tabulated as productive sites in trapping operations.

The twenty-seven specimens in the collection consist of fifteen males and twelve females. Many very young animals captured were not preserved. Twenty-four of the specimens are adults or sexually mature young. By arranging this series on the basis of dorsal colour the specimens fall rather definitely into three groups. The first group, presumed to comprise the oldest individuals, is approximately "Sayal brown" in appearance above. The second group is more nearly "wood brown", and the third group closely approaches "drab". The drab group seems undoubtedly to be made up of the youngest animals, although, as has been remarked, they are sexually mature. None of this group was collected before July 8, on which date one was collected containing six embryos. The significance of the second group, specimens with a general dorsal aspect of "wood brown", is unknown. Specimens of this type were collected throughout the summer, from June 6 to July 26. One specimen collected on June 6 appears to be, at least in part, in winter coat.

The measurements of the three groups were averaged separately and no difference regarded as significant was found between the "Sayal brown" group and the "wood-brown" group. They were consequently averaged together and their measurements are as follows: L. 175.4, T. 87, H.F. 21, Wt. 22.8. The average measurements of the "drab" group (young) are as follows: L. 168.8, T. 77.2, H.F. 19.8, Wt. 18.2.

Synaptomys cooperi. COOPER'S LEMMING MOUSE.—A rather rare species of which only seven specimens were secured. All specimens were collected in moist woods and in every case the immediate habitat association included sphagnum moss. At least two distinctive tree associations constituted the gross cover of occupied habitat; alder-black spruce-tamarack and red maple-balsam fir-balsam poplar. Runways and holes in the moss, or ground, were characteristic signs of the presence of this species. Dissection of a young female (L. 103, Wt. 18) which, incidentally was collected during the forenoon, disclosed three embryos.

The average measurements of the five adult specimens are: L. 121.9, T. 19.7, H.F. 18.3, Wt. 30.

Clethrionomys gapperi. RED-BACKED MOUSE.—Fairly common during the summer of 1931; a series of thirty-four specimens was preserved (18 males and 16 females). Rather heavily forested situations appear to be preferred by this species and nearly all of our data indicate that

immediate cover such as rocks, logs and moss, are essential elements in the habitat. There appeared to be a slight concentration of this species about talus slopes where tree-growth encroached over the outlying rim. The next most frequented habitat was moist, old, hardwood forests (maple-birch, etc.), wherein they lived about roots and fallen logs. Occasional specimens were taken in all but the more open and dry forest situations and the wettest bogs.

The first young animal collected was taken on June 6. In size it was about half the body bulk of an adult. By mid-July young of the year were sexually mature and producing young. Four embryos were noted in one female of this age group and five in another. The size of these young animals is indicated by the following averages: L. 131.7, T. 28.8, H.F. 19.7, Wt. 23.5. The fourteen specimens regarded as fully adult average: L. 151, T. 39.8, H.F. 20.5, Wt. 29 (thirteen specimens). An item of interest concerns the finding of small red mites (see Fraleigh, 1929) on the ears of most of the Red-backed mice we captured.

***Microtus pennsylvanicus*.** MEADOW MOUSE.—Taken fairly regularly throughout the summer but not commonly in any particular habitat. The situations where the species was most frequently collected were the borders of Scirpus marshes along the shore of St. Joseph Channel and Lake St. George and wet flats beneath alder-willow and birch-balsam overgrowth. One young specimen was taken from a talus slope at the edge of woods and one from an alder-sphagnum swamp.

Of the twenty-six specimens preserved only five were fully mature animals and these were all males. Of the twelve sexually mature young specimens secured, seven were males and five were females. The remainder, made up of very young animals, comprised five males and four females. Though our facts are fragmentary they suggest that if an uneven sex ratio existed in the mature population an adjustment toward a more equal ratio was under way. The youngest pregnant female, still in the woolly coat, measured: L. 138, Wt. 27. Four uterine swellings about 7 mm. in diameter were noted when this specimen was dissected. Another pregnant immature specimen dissected disclosed five foetal young. The average measurements of the five adult males are as follows: L. 167.2, T. 46.3, H.F. 20.6, Wt. 44.2.

***Microtus chrotorrhinus*.** YELLOW-CHEEKED VOLE.—Seven specimens were secured, six from old talus slopes where tree growth had encroached to, and even upon, its rim. The specimens were secured near the outer border of the talus where bulky material had been carried farthest out. Countless minute caves were found beneath the rocks in such situations

which, having become partly overgrown with moss, effectively produced moist, cool micro-climates suited to the Yellow-checked Vole. The one specimen not taken on a talus slope was secured from a runway in the sphagnum in a black spruce bog on a high hill.

One young female (L. 157.5, Wt. 38) collected on July 26 was found to contain two well-developed young. A fully adult specimen contained five foetal young. Five specimens of the series collected can be regarded as adult, or nearly so. Their average measurements are: L. 168.5, T. 49.5, H.F. 20.5, Wt. (four specimens) 38.2.

Ondatra zibethica. MUSKRAT.—Trappers who restrict their activities to the area with which we are concerned depend largely on the Muskrat yield each year. The marshes of St. Joseph Island are among the best local trapping stations according to reports. We observed the species occasionally in the cat-tail marshes bordering the St. Joseph Channel, and noted the runways and dens of bank-dwellers along streams and along shores fronted by *Scirpus* marshes. A skull-specimen from the Garden River Indian Reserve was preserved.

Rattus norvegicus. HOUSE RAT.—Since our camp during the summer of 1931 was on a vacant farm several observations of this species were made about the buildings. The species is to be expected throughout settled sections. We were not able to obtain any exact information as to the advent of this creature into the region. Obviously it has been there many years.

The adult male specimen collected measured: L. 378, T. 155.5, H.F. 41, Wt. 240.

Mus musculus. HOUSE MOUSE.—Distributed generally through settled portions of the area surveyed. Although usually found in or about buildings, the species wanders afield somewhat. One specimen collected on the bank of the Iron River was approximately a quarter of a mile from the nearest building.

The average measurements of three adults collected are: L. 167.7, T. 78.5, H.F. 18.5 and the weight of one was 14.

Zapus hudsonius. MEADOW JUMPING MOUSE.—Six specimens were collected in mouse traps during the summer of 1931 suggesting that the Meadow Jumping Mouse was not particularly rare that year. Two types of habitat recorded appear to indicate a preference for more open moist situations. Three specimens were taken from wet sedge and grass swales in farmland and two from wet alder-willow flats. One young

animal was taken on a mud-sand bar on a small stream overhung with old mixed woods.

The average measurements of the adults are: L. 213.5 (four specimens), T. 132.8 (four specimens), H.F. 30.6 (five specimens), Wt. 18.8.

Napaeozapus insignis. WOODLAND JUMPING MOUSE.—Our one record of this species during the summer of 1931 indicates that it was not common in the area during that summer. The specimen secured was not taken until July 25th after almost two months of trapping the varied habitats of the region. It was captured in a dry tangled brûlé beneath a thicket of young aspen poplar, bird cherry and scrub willow.

The specimen, an adult female, is notably bright ochraceous tawny along its sides. It is somewhat more highly coloured than is characteristic of *N. i. abietorum* but equals large specimens of that form in size. The specimen therefore suggests some influence of both *abietorum* and the newly described form, *N. i. algonquinensis* (Prince 1941).

Measurements of the specimen are: L. 262, T. 167, H.F. 31.5, Wt. 27.

Erethizon dorsatum. PORCUPINE.—Observed regularly but not commonly throughout the summer. Fourteen dens of this species were discovered, one in moist ground among roots of old White Cedars and the others in crevices among rocks of old talus slopes in the forest. They were all cool and humid. Near these dens porcupine excreta were observed, usually in rather large and conspicuous deposits, attesting to the den sanitation of these animals and indicating their behaviour in repeatedly using one situation near the entrance for defecation.

On July 9, Messrs. Coventry and MacLulich observed a female porcupine and her one young which was about one-third grown. When discovered the animals were in a den. The parent deserted the youngster and slowly climbed a tree. They observed closely the functioning of the tail in climbing. The distal portion was arched down, pressed against the tree-trunk. When muscular pressure straightened the tail, the animal was raised about three inches. The young porcupine was also observed to climb in this manner but with more rapid movements.

The specimen collected (disclosing two fairly-small embryos when dissected) was feeding on elm leaves. It measured: L. 688, T. 210, H.F. 100.

Vulpes fulva. RED FOX.—One of the more dependable fur-bearers taken locally by trappers in winter but subject to periodic variation in numbers. A den of this species was found during the summer of our visit but no foxes were observed.

Canis latrans. BRUSH WOLF.—Most of the residents did not distinguish between the Brush Wolf and the Timber Wolf but trappers assured us that both occur. Mr. Hugh Erwin, a farmer with whom we were neighbours during our 1931 camp near Maclellan, told us he moved to the region in 1886 and at that time there were no wolves of any kind in the district. This is consistent with the general conception of the movements of the Brush Wolf in Ontario. He gave the year 1912 as the first when "wolves" came in, as he thought, from Michigan. Since then, "wolves" have become more widespread and certainly at times numerous. They first became troublesome about 1921. Some farmers discontinued raising sheep in the district because of "wolves". Both ewes and lambs are attacked. Mr. L. G. Davidson lost 28 fully-mature ewes out of a flock of 51 in the winter of 1921-22. In 1925 another farmer lost 15 sheep, seven in one night. There has been both summer and winter loss. Although it is not possible to designate the species of wolf involved, it seems probable that both wolves which occur in the region are capable of destroying sheep. We were told of "two or three" young Brush Wolves being found on Pine Island near our camp in the early summer of 1929. None was seen by our party during 1931.

Canis lupus. TIMBER WOLF.—Local trappers state that this species occurs within the area of our survey as well as the Brush Wolf. The general opinion of residents of the region is that big wolves are usually found more to the north, less frequently in the cultivated section with which we are concerned. Clarke (1938) records that Timber Wolves were "common enough up Goulais river where the writer spent the summer of 1928 in the region now included in the Goulais game preserve." This district is adjacent to our area.

As mentioned in connection with the Brush Wolf, Mr. Hugh Erwin gave it as his opinion that no kind of wolf was present in the farming district in 1886. This is a possibility and seems certainly to be true of the Brush Wolf. The larger Timber Wolf may not have been prevalent at that time, although it would seem certainly that the area was within its range.

Ursus americanus. BLACK BEAR.—Bears are observed fairly regularly in the Sault Ste. Marie region. These may be largely seasonal wanderers from the unsettled north but there are still areas within the limits of our survey where bears occur throughout the year. The vast swamp on St. Joseph Island, for example, no doubt harbours the species the year round. Tracks were observed by us on two occasions during

the summer of 1931. On June 16 school boys at Maclellan reported that a "brown" bear was seen in a woodlot adjacent to the school grounds on that day. Also, the writer was informed by Mr. J. Savage, a student at the University of Toronto, that on August 27, 1933, he inspected two captive bear cubs at Sault Ste. Marie which were said to have been captured near Batchawana. Mr. Savage stated that these animals were of the cinnamon colour variety. Black is, however, the normal and usual colour to be expected in the region. In fact, we talked with trappers who had never seen bears which were brown in colour.

Martes americana. MARTEN.—Reports of trappers in the region all agree that marten are virtually extirpated in the Sault Ste. Marie region. Occurrences of this species within recent years are rare indeed. Mr. James C. Fisher took one in 1921 and Mr. L. G. Davidson saw one in his farm woodlot, near the St. Joseph Channel at Maclellan, in 1925 or 1926. Seton (1909) refers to a female with four young observed by George Linklater of Desbarats many years ago, possibly within the territory of our survey.

Martes pennanti. FISHER.—This fur-bearer has also become very rare but an occasional wandering animal is taken within the area with which we are concerned. Mr. Wm. A. Boyer, a commercial trapper, told us he still obtains fisher regularly, but not plentifully, inland, in sections adjacent to the Sault Ste. Marie region and Clarke (1938) states that they "still occur in the Pancake region."

Mustela cicognanii. BONAPARTE WEASEL.—Mr. Lawrence Mannard and other trappers who confine their activities to the more settled sections of this region find weasels one of the most frequent takes on their trap-lines but the annual catch varies from year to year. Description of the weasels captured made it evident that *cicognanii* was the species taken regularly. No trapper interviewed knew a very small weasel without a black tail-tip. Our enquiry was prompted by a northern Algoma District record of *M. rixosa* (Snyder, 1935).

Mustela vison. MINK.—This species, on the average, rates about fourth numerically, in the catch of local trappers. St. Joseph Island and the shores and islands of St. Joseph Channel are still good trapping grounds for Mink. Aside from signs, we observed the animal only twice during the summer of 1931. We were told of a "black mink" taken on the Echo River several years ago. Of historic interest is a drawing by Seton (1909, p. 874) of the head of a young Mink from Desbarats, which is within the area of our survey.

Lutra canadensis. OTTER.—Mr. James Perry, who has lived and trapped the region since 1906, stated that his only knowledge of the occurrence of this animal was one taken about 1911 on St. Joseph Island and another seen near Nevill's Island (St. Joseph Channel) in 1929. These are our only records.

Mephitis mephitis. SKUNK.—Observed, or otherwise noted by us, regularly throughout June, 1931, less commonly during July. The Skunk is perhaps the third most numerous fur-bearer in the Sault Ste. Marie region.

The average measurements of two adult females collected are: L. 554, T. 209.5, H.F. 67.5.

Lynx canadensis. CANADA LYNX.—We were told of a lynx having been taken on the "lower end of St. Joseph Island about 1913." The report presumably applies to this species. Any other information we secured concerns the unsettled hinterland to the north where commercial trappers must now go to secure fur other than Muskrat, Weasel, Skunk, Mink and Fox.

Cervus canadensis. WAPITI.—The Wapiti, or American Elk, has no place in the native fauna of the Sault Ste. Marie region, historic or present. It is included here because the species was introduced into the area. In 1934, fifteen females and five males from Wainwright Park in Alberta were released near Glendale. These animals rapidly disappeared. The last one noted, so far as the writer is aware, was in January 1935, when a lone animal was reported feeding at a haystack in a farmer's field near the point of introduction.

Odocoileus virginianus. WHITE-TAILED DEER.—Mr. Frank Shewfelt, who has lived in the Sault Ste. Marie region since 1879, told us that deer were first seen there about 1887. This approximate time was verified by Mr. Hugh Erwin who moved to the area in 1886. Mr. Erwin stated that it was his belief that deer had not been seen up to the time he settled there but that very shortly afterward a few were reported. It was generally understood that they came from Michigan.

Signs of White-tailed Deer were noted regularly by us during the summer of 1931 and a few animals were seen.

Alces americana. MOOSE.—According to the recollections of Mr. Frank Shewfelt and Mr. Hugh Erwin, long-time residents of the area, Moose did not inhabit the Sault Ste. Marie region in 1886. They were

both of the opinion that Moose came in from Michigan "following the White-tailed Deer," about 1889. An explanation of this situation would seem to be in the erratic and changing local distribution of this species, since the Sault Ste. Marie region must be regarded as within the general range of the species in recent historic times. A record on file in the R.O.M.Z. concerns a "head" taken in the Sault Ste. Marie region in 1904. Mr. Joseph Towley states that this animal had a spread of fifty-one inches. Moose were also referred to as a game animal of the Desbarats area in "Rod and Gun in Canada" in a September, 1905 issue (p. 440). At the present time, Moose wander into the settled area with which we are concerned. We saw tracks on three occasions in 1931 and one animal was reported as seen near MacLennan on June 12.

Rangifer caribou. WOODLAND CARIBOU.—It seems apparent that many years ago, before settlement, (Woodland Caribou occupied some of the islands of the St. Mary River) and the St. Joseph Channel, and that they must have once travelled through the area of our 1931 survey. Mr. James C. Perry told us that a small island on the Michigan side was known, at least locally, as Caribou Island. A lake east and north of Desbarats is named Caribou Lake. Mr. Hugh Erwin told us that an occasional caribou was said to be present in 1886 when he first settled there but it was prior to 1870 that they occurred with any frequency. In a letter on file in the R.O.M.Z., dated Nov. 26, 1904, Mr. Joseph Towley wrote to the late J. H. Fleming, from Sault Ste. Marie, as follows: "You were asking about Caribou: They are quite plentiful on a range of hills fourteen miles north of the Soo; also on a range back of Echo Bay and Garden River, but I do not know of any points south of those mentioned. They follow the highest ranges as a rule." Clarke (1938) states that according to old settlers the Pancake area was once a fine caribou country. In the Toronto "Mail and Empire" for October 8, 1931, and in the Toronto "Telegram" for March 15, 1934, reports indicated an increase in Woodland Caribou to the north in this general section of Ontario. But, it is not to be expected that this splendid animal will return to the immediate Sault Ste. Marie area. ✓

LITERATURE CITED

- CLARKE, C. H. D. 1938. A study of the mammal population of the vicinity of Pancake Bay, Algoma District, Ontario. Natl. Mus. Can., Bull. 88, pp. 141-152.
 FRALEIGH, LUCY B. 1929. The habits of mammals at an Adirondack camp. N.Y. State Mus. Handbook, No. 8, p. 102.
 MACLULICH, D. A. 1937. Fluctuations in the numbers of varying hares (*Lepus americanus*). Univ. Toronto Studies, Biol. Ser., No. 43.

- MILLER, GERRIT S., Jr. 1924. List of North American recent mammals, 1923. Bull. U.S. Nat. Mus. 128.
- PRINCE, LESLIE A. 1941. A new race of *Napaeozapus insignis* from Ontario. Occas. Papers R.O.M.Z., No. 7.
- SETON, ERNEST THOMPSON. 1909. Life-histories of northern animals. Chas. Scribner's Sons.
- SIMPSON, GEO. G. 1931. A new classification of mammals. Bull. Am. Mus. Nat. Hist. 59: 259-293.
- SNYDER, L. L. 1935. Another least weasel specimen from Ontario. Can. Field-Nat., 49: 169.

SUMMER BIRDS OF THE SAULT STE. MARIE REGION, ONTARIO

By L. L. SNYDER

The following annotated list is based largely on the Museum's field work carried on during June and July of 1931. The reader is referred to the General Introduction for a description of the area and for a delineation of the boundaries of our survey.

During this and all previous faunal surveys made by the Museum there has been reciprocal aid between workers in the field. Therefore, thanks are due to all members of the party, but to Mr. T. M. Shortt who observed and collected birds throughout the summer, to Mr. John Edmonds, who spent more time with bird-work than with mammal-work, and to Mr. J. L. Baillie who contributed principally to bird-work after his arrival on July 3, special acknowledgment is due.

Since the summer of 1931, Mr. Harry Graham, a resident of Sault Ste. Marie, has made many observations on the breeding birds and forwarded particulars for our files. Many of his records are included in this report and we take this opportunity to thank him for his contributions.

There are a number of references in our ornithological literature which pertain to birds of the Sault Ste. Marie region and contiguous areas, especially concerning adjacent sections of the United States. No attempt has been made to compile and include a complete bibliography, primarily because we are concerned here with birds found in summer. Such references as have been cited are listed at the end of the paper.

Our collection of summer birds from the Sault Ste. Marie region comprises 398 specimens representing 104 species. The total of species included in the following list is 133. We have been able to establish satisfactory breeding evidence for 92 of these. In the catalogue of specimens the year in every case is 1931.

The arrangement of the list follows the American Ornithologists' Union Check-List (1931 edition) and the English specific names are from "Birds of Canada" by P. A. Taverner.

Gavia immer. COMMON LOON.—Breeding pairs of Common Loons were established along the shores and about the islands of the North Channel, along the St. Joseph River, the bays of Lake Superior, and the larger inland lakes. The earliest date on which young were seen was June 30 when a family group was recorded at Island Lake; parent birds were escorting two nestlings of small size in their first dark downy plumage. A nest found near the water on the shore of Maskinonge Bay

near MacLennan on June 24 contained one egg which had failed to hatch and the broken shell of another, from which a young bird had emerged very recently.

Podilymbus podiceps. PIED-BILLED GREBE.—Observed throughout the summer whenever suitable areas were reconnoitred. From one to six adults were noted in the several occupied situations discovered. Twice, in separate areas, young of the year augmented daily totals to nine. Young had hatched and left a nest found on June 24 near MacLennan and downy young about half-grown (one weighing 247 grms.) were secured on July 13. We have since received details from Mr. Harry Graham of a nest of this species containing six eggs found in a marsh of Maskinonge Bay on June 28, 1937.

Downy ♀ July 13, Point au Pins Downy ? July 13, Point aux Pins

Phalacrocorax auritus. DOUBLE-CRESTED CORMORANT. — A small nesting colony of this species is established "on an island in the North Channel near Thessalon and another on a smaller rock near by" according to information supplied us by the late Wm. I. Lyon, who banded birds in this area during several summers. We had no opportunity to visit these colonies during 1931.

Ardea herodias. GREAT BLUE HERON.—From one to six individuals of this species were observed daily during the summer of 1931, with occasional totals as high as twenty-seven. It was noted in situations scattered throughout the area, from Little Rapids to Goulais Bay. A small colony consisting of three nests, occupied by young, was found on July 9 at Pumpkin Point near the shore of Lake George. The site was in an elm-ash forest. There were probably other nesting colonies within the area of our survey undiscovered by us.

A demonstration of how a high degree of special development can be a handicap under certain circumstances was observed in connection with the Great Blue Heron. The species is undoubtedly beautifully adapted as a wader. Its long legs and neck and its deliberate and composed manner serves it well in its stealthy search for prey in shallow water, but constitute poor equipment for aerial combat. On July 9, Mr. T. M. Shortt and the writer observed a Herring Gull chasing a Great Blue Heron along shore at Lake George. When first seen the heron was flying slowly with characteristic dignity about fifteen or twenty feet above the water, its neck folded in, and its legs extended rearward. The gull was next observed to be in hot pursuit. Overtaking the heron from above the gull made a diving attack. The heron's steady wing-strokes,

its even coasting gait, and the nice adjustment of its legs and neck abruptly changed to a confusion of impedimenta. The bird seemed to be falling apart. To the accompaniment of guttural squawks the great wings beat frantically, the legs dangled and kicked helplessly, and the serpentine neck extended and writhed in the heron's apparent effort to ward off its attacker. As the gull wheeled upward, the heron literally pulled itself together and regained its gait and composure, but time after time the attack was repeated and on each occasion the heron exhibited the same lack of dexterity and co-ordination in aerial defence. Surely, if the gull had been a mortal foe, the heron would have been an easy victim. We could not offer an explanation for the unsocial behaviour of the gull.

♀ June 8, Laird

Juv. ♂ July 9, Pumpkin Point

***Botaurus lentiginosus*.** AMERICAN BITTERN.—Not plentiful but one or two usually were noted whenever suitable habitat areas were visited. Several young bitterns apparently constituting a brood were observed on July 27 in a marshy border of the shore of Maskinonge Bay.

♂ June 26, MacLennan

***Ixobrychus exilis*.** LEAST BITTERN.—A pair of Least Bitterns was established in the marshy border of Maskinonge Bay during the summer of 1931. Mr. Harry Graham found a nest with five eggs in the same section of the area on July 7, 1941. These records fall approximately on the northern limits of range of the species and extend its known range in Ontario westward approximately 150 miles.

♀ June 20, MacLennan

***Anas rubripes*.** BLACK DUCK.—We observed this species occasionally and noted that apparently suitable habitat existed here and there throughout the area. Five young, still in downy plumage, were observed on Lake George on July 9. Families were observed more commonly during late July, five such groups totalling thirty birds having been observed on July 27. Mr. Harry Graham found a parent with her brood within the city limits of Sault Ste. Marie on June 29, 1939. Although we cannot say on the above evidence that the Black Duck was plentiful in the Sault Ste. Marie region, it was the most common duck and the area probably supports a larger population than our record indicate.

Downy ♀ June 26, MacLennan

♀ July 9, Laird

Juv. ♀ July 9, Laird

♀ July 10, Laird

Juv. ♂ July 9, Laird

***Nyroca collaris*.** RING-NECKED DUCK.—A male was observed at Gordon Lake on June 29. This summer occurrence coincides with the

period during which this species began to be reported as breeding in more easterly sections of North America.

Glaucionetta clangula. COMMON GOLDEN-EYE.—Observed occasionally along the shores and islands of the St. Joseph portion of the North Channel and Lake George. An occupied nesting hole, from which a female was flushed on two occasions, was situated near the top of an old rampike at least fifty feet from the ground. The situation was fully one hundred yards from the water. The elevation of the nest and the distance to water would seem certainly to present two pronounced difficulties for newly-hatched young to surmount. The average number of young in the families encountered was nine.

2 downy ♀ ♀ July 9, Laird

3 downy ♂ ♂ July 9, Laird

Lophodytes cucullatus. HOODED MERGANSER.—The Sault Ste. Marie region is within the range of this species but we did not observe it during the summer of 1931. Cabot (Agassiz, 1850), however, records that a young one was shot from a flock in a creek at Point aux Pins, within our area, on June 30, 1848.

Mergus merganser. COMMON MERGANSER.—Observed occasionally along the St. Joseph Channel and at Echo Bay of Lake George. Mr. Baillie observed twenty-eight nearly full-grown young with one adult female at the latter locality on July 24.

Downy ♂ June 13, Laird

Astur atricapillus. AMERICAN GOSHAWK.—On June 22 our party, travelling by automobile along a woodland road on St. Joseph Island, flushed a Goshawk at close range from the road ahead. As the hawk flew off through the lower branches of dense forest, its dark mask, blue-gray upper parts, size, flight, etc., revealed its identity. The species was not observed elsewhere in the region.

Accipiter striatus. SHARP-SHINNED HAWK.—A rare summer resident of the region; noted on only two occasions by us.

Accipiter cooperi. COOPER'S HAWK.—Rather scarce but individuals were noted in various sections of the area visited, more regularly toward the end of the summer. On July 24 the writer was impressed by the complete quiet which descended over a woods when a Cooper's Hawk dashed past. Not a bird song could be heard for nearly four minutes, after which a Red-eyed Vireo, rather hesitatingly, resumed its measured phrases.

Buteo borealis. RED-TAILED HAWK.—Noted occasionally in widely-separated sections of the area, Gordon Lake, Maclellan, Iron River and Bellevue. A pair of Red-tailed Hawks reared its family in a nest situated on a ledge high up on the rock cliffs at Iron River. The nest, from fairly close inspection, appeared as characteristically bulky as one built in a normal arboreal site.

Buteo platypterus. BROAD-WINGED HAWK.—A fairly common hawk of the region; from one to four noted nearly every day throughout the summer. Immatures in streaked plumage were observed on June 17. These were probably one-year-old birds. The female taken by Mr. Edmonds on July 20 was uttering the characteristic call of the species when first seen.

♀ June 17, Maclellan

♀ July 20, Little Rapids

Haliaeetus leucocephalus. BALD EAGLE.—Twice during the summer a Bald Eagle was seen about Maskinonge Bay, probably the same individual. No nesting sites were discovered by us and none was known to residents of the region so far as we could determine. An adult seen during the summer of 1889 at Echo Lake is on record ("Kingfisher", 1889).

Circus hudsonius. MARSH HAWK.—The commonest hawk of the region. June 24 was the earliest date on which we noted young of the year out of the nest.

Pandion haliaetus. OSPREY.—Observed fairly regularly but not commonly about the shallower bays of the larger bodies of water. A pair nested near the base of Long Point, which lies at the northwestern end of Maskinonge Bay of the St. Joseph Channel, during the summer of our visit. Here we sometimes watched the parent birds dive in the bay for fish which they carried to the nest. Bull-heads were among the fish known to be captured.

As a matter of record, an item inscribed on the label of the specimen collected states that its intestinal tract measured twelve feet and one inch, from stomach to anus.

♀ June 8, Laird

Falco peregrinus. PEREGRINE FALCON.—Rare in the region. One was seen at Rydalbank on June 30 and a pair was found established on a high rock cliff at Garden River. We were unsuccessful in locating a nesting ledge from our position below but all circumstances suggested that this pair of birds was established there for nesting.

Falco columbarius. PIGEON HAWK.—One definite record of this species was made on the shore of Lake George on July 9. One bird was observed.

Falco sparverius. AMERICAN SPARROW HAWK.—Not uncommon; observed regularly about barns and open wooded pastureland. Among the notes forwarded by Mr. Harry Graham, he reports the finding of a nest of this species, discovered at Maskinonge Bay on July 16, 1939. Young were still in the nesting cavity on that date.

♂ June 12, Laird

♂ June 25, MacLennan

Canachites canadensis. SPRUCE GROUSE.—During the summer of 1931 none of our party observed Spruce Grouse in any section but reports from hunters and others interested in wildlife all agree that it occurs rarely. Experience has fully demonstrated to us that this species can exist sparsely in an area in summer and not be in the least conspicuous.

Although the R.O.M.Z. annual questionnaire attempts to obtain information on birds for the fall and winter periods only, reports from the Sault Ste. Marie region have been consulted concerning this non-migratory species. Observers from Batchawana Bay on Lake Superior to Thessalon agree that the species was scarce in 1939 and 1940. The largest number observed within this area was nine, tabulated by Mr. Roy V. Maguire, in the vicinity of Rydal Bank during the fall and early winter of 1940-41. Dr. C. H. D. Clarke observed the species (Ms) in the Goulais River valley between May 24 and September 22, 1928.

Bonasa umbellus. RUFFED GROUSE.—Observed regularly throughout the summer of 1931. The first young of the year, a newly-hatched brood of about twelve, were observed on June 13. On June 18 these young were able to fly. The behaviour of the female parent of this brood was especially entertaining. While the young flushed, one or two at a time, and settled in scattered places, the hen stood erect with body plumage much depressed and the head crest elevated. Following this she puffed out her plumage, appeared to strut, clucked and emitted her curious "bzzzt" notes. At times she flattened herself along the ground with neck and head thrust out and repeatedly "mewed and hissed."

A nest with eggs was found as late as June 16 in 1931. By the last week of June grouse incubation was apparently complete. Families were noted regularly thereafter. An interesting news item originating from Sault Ste. Marie on October 3, 1932, states that a Ruffed Grouse shot there had eaten a fourteen-inch Garter Snake. The snake was being

swallowed and digested by degrees. The writer can attest to the probable accuracy of this report, having observed such an incident.

♂ June 8, Laird

Downy ♂ June 13, Laird

Downy ♂ June 22, Jocelyn

♀ July 13, Point aux Pins

Juv. ♂ July 15, Echo Bay

Juv. ♀ July 20, Rydal Bank

Perdix perdix. (EUROPEAN) GRAY PARTRIDGE.—An importation of this species took place about May 1, 1930, when approximately 25 pairs were released five or six miles west of Sault Ste. Marie, near the Provincial Fish Hatchery. A news dispatch from Sault Ste. Marie dated January 13, 1931 (Toronto "Globe") reported that many of these birds had come close to the city, even "within the city limits." A similar report (Toronto "Telegram") dated December 2, 1933, states that "Hungarian Partridge have even ventured in the grounds of the City Hall." Obviously this introduction persisted for three years. No recent reports are available.

Phasianus colchicus. COMMON PHEASANT.—Another species which has recently been introduced in the area. Few details relative to the success of its introduction are known to us. Residents we met in 1931 told us that pheasants had multiplied on St. Joseph Island and apparently were well established there. Mr. Wm. Murray, game warden of the district, told us he had observed pheasants near his home south-east of Maclellan prior to 1931. About 1929, Mr. L. G. Davidson saw one on his farm near Maclellan. An introduction was also reported at Bar River. Certainly pheasants had not flourished on the mainland up to the summer of 1931 since no member of our party observed the species. No recent reports are available.

Rallus limicola. VIRGINIA RAIL.—A pair was found established and breeding in a marshy border of Maskinonge Bay. This record is the most northern for the eastern half of our province and corresponds to the most northerly records in the upper peninsula of Michigan (Van Tyne, 1938).

Downy ♀ June 29, Maclellan

♀ June 29, Maclellan

♂ June 29, Maclellan

Porzana carolina. SORA RAIL.—Observed near Maclellan and Gordon Lake. Probably the most numerous of the two rails recorded, but not plentiful. An historic record (Bell, 1861) concerns a male shot at Sault Ste. Marie, Aug. 30, 1860.

♂ June 29, Maclellan

Oxyechus vociferus. KILLDEER PLOVER.—A common breeding bird of the area, from one to twelve having been recorded daily throughout the summer. The hatching of young Killdeers was recorded from the time of our arrival until June 23. It was observed that both sexes of this species perform the broken-wing ruse when their nest or young are approached.

Downy ♂ June 7, Laird

Downy ? June 23, MacLennan

Philohela minor. AMERICAN WOODCOCK.—Recorded on four occasions near MacLennan during the summer of 1931; the largest number observed on one day, June 5, was three. Considering the daytime reclusiveness of the species in summer, it is probable that Woodcocks are more plentiful than our actual records suggest. Bell (1861) states that they were numerous in August 1860 at Sault Ste. Marie.

Capella delicata. WILSON'S SNIPE.—Observed in wet swales in meadows near MacLennan and at Echo Bay. A young bird collected at the former locality, still with downy plumage about the head and neck and thighs, established a breeding record for the region. Six birds seen at Echo Bay on July 19 probably constituted a locally-reared family.

Juv. ♀ June 16, MacLennan

♀ June 16, MacLennan

Actitis macularia. SPOTTED SANDPIPER.—Not uncommon and observed in many sections of the area visited. Nests with full complements of eggs, fresh to slightly incubated, were found on June 9, 10 and 11, near MacLennan. On June 10 a wounded adult Spotted Sandpiper escaped by swimming rapidly away. When Mr. Edmonds, the observer, pursued it, the bird dived in a shallow part of Maskinonge Bay and was not seen to reappear on the surface.

♀ June 13, Laird

♂ July 15, Echo Lake

Pisobia minutilla. LEAST SANDPIPER.—This species occurs in the region in summer as a migrant and has no other status there. One was collected at Laird on July 9 and two were observed at Echo Bay on July 22.

♂ July 9, Laird

Larus argentatus. HERRING GULL.—Observed regularly and commonly along the coast and bays of the North Channel, Lake George and also along the rivers and about the larger inland lakes of the area. Most of the Herring Gulls observed during the early part of the summer were adults but there was a population of younger, non-breeding birds

in the region at that time. Mr. George Sullivan of Desbarats, who knows the shores and islands of the North Channel perhaps better than anyone else in the district, stated that Herring Gulls nest in large numbers on "Grant Island" off Thessalon and also on Fox Island. According to a banding record in the Canadian Field-Naturalist (Nov. 1929, p. 193) another nesting site is probably situated on Court Point, St. Joseph Island. Young of the year in the dark plumage were observed by us late in the summer. A sick specimen dispatched by the writer on July 9 appeared to be suffering from a diseased condition of the intestinal tract.

♂ June 24, Maclellan

♀ July 9, Laird

Larus delawarensis. RING-BILLED GULL.—Throughout the greater part of the area the numbers of Ring-billed Gulls observed are much fewer than of Herring Gulls. Although we identified and recorded the species regularly, twelve was the largest daily total noted. If we could have visited the islands off Thessalon, we would have obtained a better conception of the population of this gull in the area. Mr. George Sullivan of Desbarats informed us that this species nests on "Grant" and Fox Islands.

♀ July 9, Laird

Sterna hirundo. COMMON TERN.—Observed fairly commonly in June but rarely in July. Mr. George Sullivan informed us that terns nest on "Grant Island" off Thessalon and Fox Island. On June 26, 1939, Mr. Harry Graham found a single nest of this species on Bayfield Rock in the St. Mary River.

Zenaidura macroura. MOURNING DOVE.—A rather rare breeding bird in the region. Mr. Hugh Erwin, a near neighbour to us in camp at Maclellan, told us that a pair nested in an apple tree on his farm in 1928 or 1929. Mr. Harry Graham found a new nest prior to egg deposition in a spruce tree near Maclellan on August 29, 1938.

♂ June 23, Hilton Beach

Ectopistes migratorius. PASSENGER PIGEON.—Certain records of this extinct species are of historic interest to this paper. It is evident that the Passenger Pigeon was a summer resident of the Sault Ste. Marie region. Henry (1809) says they were plentiful in the summer of 1762 and Cabot (Agassiz, 1850) saw some flocks at Point aux Pins on June 30, 1848.

Coccyzus erythrophthalmus. BLACK-BILLED CUCKOO.—Our daily records show that the Black-billed Cuckoo was noted throughout the summer but only an occasional individual was observed prior to June 21.

Thereafter, until we left at the end of July, the species was observed more commonly and in all sections visited. As many as nine were recorded on a single day. Occasionally Black-billed Cuckoos were heard calling at night; the latest date on which night calling was noted was July 21 (11.30 p.m.). A nest with five eggs, reported to us, was found about June 30, near Maclellan, in a hazel shrub.

Although there is no evidence that the Yellow-billed Cuckoo (*Coccyzus americanus*) occurs in the region in summer, attention well may be drawn to two records in the literature: Preece (1924) mentions that the species has been observed, presumably, on migration at Sault Ste. Marie, Michigan; Pinney and MacNaughton (1937) report a September specimen taken in "Ontario, L. Superior, Michipicoten." According to Pinney (Ms.) the label on this specimen appears to indicate "Michipicoten Island," which is approximately one hundred miles northwest of the area with which we are concerned, and the date of capture is September 10, 1901.

♀ June 21, Maclellan

Juv. ♂ July 25, Maclellan

♀ July 9, Laird

Otus asio. AMERICAN SCREECH OWL.—Although perhaps best included in this list hypothetically, Mr. Harry Graham has established sight records of this species during the summer months in the Sault Ste. Marie region. The nearest corroborative records are those of Clarke and Ricker (1939) from Lake Nipissing, Boies (1897) from Neebish Island (Mich.) and Van Tyne (1938) from Cheboygan County, Michigan.

Bubo virginianus. GREAT HORNED OWL.—Not a sight or sound record of this or any other species of owl was made by us during the summer of 1931. Undoubtedly the population of the Horned Owl was low that year. Mr. Harry Graham assures us that it occurs in the region *in summer* though he had no specific notes as to date. Other residents knew the owl by description and the Museum's questionnaire shows that it is present in autumn and winter. Dr. C. H. D. Clarke observed young ones on July 12, 1935, a few miles north of our area, at Batchawana Bay. (Baillie and Harrington, 1936.) On the basis of the combined circumstances mentioned above, the Great Horned Owl is included in our list.

Strix varia. BARRED OWL.—Although our data on this species are fragmentary such evidence as we have is of value. Cabot (Agassiz, 1850) saw it in the summer of 1848 at Sault Ste. Marie. Mr. Harry Graham writes that he has not discovered the species in the Sault Ste. Marie region in summer but knows that occasionally it occurs in autumn and

early winter. Dr. C. H. D. Clarke met with it on July 31 at Carp Lake (near Batchawana Bay) somewhat north of the region covered by our report. If the species was found in summer in 1848 and occurs now in an area immediately adjacent, it may well be expected, perhaps rarely, as a breeding bird of the Sault Ste. Marie region.

Antrostomus vociferus. WHIP-POOR-WILL.—Although our records of this nocturnal species pertain largely to the vicinity of our camp near Maclellan, they possibly represent its status throughout much of the area. Whip-poor-wills were heard and seen regularly throughout the summer. From one to eight were recorded nearly every night. In addition to the Maclellan records they were noted at Sault Ste. Marie and Bar River. The female collected was giving the characteristic call of the species. This fact is mentioned because of its interest in connection with the theory of song and territory in current ornithology. That females of some other species "sing," or at least utter the vocal call of their kind, has not been reported commonly.

♀ July 25, Maclellan

Chordeiles minor. NIGHTHAWK.—A fairly common breeding bird of the region. When young were on the wing, by mid-July, the daily total of Nighthawks seen, occasionally reached fifteen. Two nests with fresh clutches of two eggs each were found on June 9. On June 29, a female Nighthawk was flushed by the writer from brooding her newly-hatched young in the cut-over edge of a woods flanking a cultivated field. She perched on, and parallel to, the top strand of an ordinary woven-wire fence. Previously a female had been observed by Mr. Shortt similarly perched on a slender, dead, birch twig. In this instance, the bird held its wings in a drooped position perhaps better to balance itself. An additional observation of interest pertains to a male which we observed to give its "bizzert" call from a perched position, not while on the wing which is usual.

♀ June 9, Laird

♂ June 9, Laird

Downy ♂ June 29, Maclellan

Downy ♀ June 29, Maclellan

♂ July 16, Maclellan

♀ July 25, Maclellan

Chaetura pelagica. CHIMNEY SWIFT.—Fairly common about settlements and cultivated terrain and noted occasionally in wooded areas. We were not successful in finding a nest in hollow trees where such was occasionally suspected. Chimney Swifts nest in the tower of a church in Sault Ste. Marie according to Mr. Harry Graham.

♂ June 30, Maclellan

Archilochus colubris. RUBY-THROATED HUMMINGBIRD. — Observed fairly regularly during the summer of 1931, three being the largest number for one day. Mr. Harry Graham has supplied us with our only breeding record for the region. His observation concerns a female in close attendance with two young near Maclellan on July 19, 1939.

Two casual notes made during the summer of 1931 are of interest. On July 13, a male Ruby-throated Hummingbird was observed following a rather restless Yellow-bellied Sapsucker. The woodpecker came to rest on a twig and the hummingbird hovered over it. When the former moved on to another perch, the hummingbird followed. The performance was repeated until they were both lost to view.

On the evening of July 15, under good light conditions from the late day's sun, a Ruby-throated Hummingbird was seen repeatedly to dart out from its perch on a telephone wire and capture minute insects on the wing, flycatcher fashion. Preece (1923) has reported a young hummingbird caught by the flower head of the common burdock, in August 1923 at Sault Ste. Marie.

♂ June 4, Laird

Megaceryle alcyon. BELTED KINGFISHER. — From one to three were noted almost daily during the summer and in widely separated sections. An occupied nesting tunnel was found in a gravel pit at Island Lake on June 30 in 1931 and a nest found by Mr. Harry Graham on the Root River on May 29, 1937, had five eggs in it at that time.

♀ June 26, Maclellan

Colaptes auratus. YELLOW-SHAFTER FLICKER. — A common breeding bird, the most common of the woodpeckers. A set of six fresh to slightly incubated eggs was collected at Laird on June 11 in 1931. A juvenile male collected on July 25 is peculiar in respect to the extension of the black pigment areas of the body feathers, both dorsally and ventrally. The black bars on the back are fully twice as wide as is normal and the sub-terminal spots on the ventral feathers average much larger than is normal. Also, the greyish markings on the proximal portion of the ventral feathers are very dark and extensive. These features impart a general smoked and blackened effect to the specimen. A second juvenile male, though for the most part quite within the usual range of individual variation, has the front and sides of the neck rather sooty grey with a sprinkling of sooty and black streaks.

♀ June 10, Laird

Juv. ♀ June 20, Maclellan

Juv. ♂ June 20, Maclellan

♂ June 24, Maclellan

♀ June 24, Maclellan

Juv. ♂ July 2, Maclellan

♀ July 7, Maclellan

2 Juv. ♂♂ July 25, Maclellan

♂ July 25, Maclellan

Ceophloeus pileatus. PILEATED WOODPECKER.—As is characteristic of the species in most parts of its range, it was not plentiful in the Sault Ste. Marie region but one or two usually were noted daily. Several sites where these birds had excavated in standing dead trees during the late winter and early spring period were found. One was a remarkable example from the point of view of its extensiveness. An old dead maple in an open pastured woods was riddled from high up on the heavy branches down to near the base of the trunk. The workings were somewhat interrupted, trough-like gouges into the heart of the wood, parallel to the rather spiral grain of the tree. In the heavy part of the trunk these troughs were nearly a foot in depth. A heap of chips was piled at the base and scattered over a wide radius outward.

The only nesting cavity discovered was about thirty-five feet up in a Red Pine. A young of the year was collected.

♂ June 13, Laird

Juv. ♂ July 25, MacLennan

Melanerpes erythrocephalus. RED-HEADED WOODPECKER.—There is some evidence that this species may have extended its range northward to the Sault Ste. Marie region in recent times although it occurred in the Georgian Bay area in very early times. We found it rare in the summer of 1931.

♂ June 6, Laird

Sphyrapicus varius. YELLOW-BELLIED SAPSUCKER.—Next to the flicker this was the commonest species of woodpecker found in the area. Many occupied nesting holes were found during the summer and young of the year were collected.

4 nestlings (3 alcoholic) June 17, MacLennan

Juv. ♂ July 25, MacLennan

5 nestlings (alcoholic) June 25, MacLennan

Juv. ♂ July 3, Laird

Juv. ♀ July 3, Laird

Juv. ♂ July 27, MacLennan

Dryobates villosus. HAIRY WOODPECKER.—Not an uncommon species; not quite as plentiful in this area, in 1931, as the Downy Woodpecker. The earliest date on which young were observed out of the nest was July 13.

♀ June 8, Laird

♀ July 9, Laird

Juv. ♀ June 13, Laird

Juv. ♂ July 23, MacLennan

♂ June 30, MacLennan

Juv. ♂ July 27, MacLennan

Dryobates pubescens. DOWNY WOODPECKER.—Not uncommon; from one to six recorded daily throughout the summer, not including young of the year which sometimes increased daily totals to ten or twelve. The earliest date on which young were observed out of the nest was July 2.

♂ June 4, Laird	2 Juv. ♀ ♀ July 9, Laird
4 nestlings (alcoholic) June 17, Maclellann	Juv. ♂ July 9, Laird
♂ June 20, Maclellann	Juv. ♂ July 10, Laird
Juv. ♂ July 2, Maclellann	Juv. ♂ July 15, Echo Bay
♂ July 2, Maclellann	♂ July 22, Maclellann
2 Juv. ♀ ♀ July 3, Laird	Juv. ♀ July 23, Maclellann
Juv. ♂ July 7, Maclellann	Juv. ♀ July 28, Maclellann

Picoides arcticus. ARCTIC THREE-TOED WOODPECKER.—Rare; found only at Point aux Pins on July 13, 1931. A scattered family group was discovered on that occasion. Starbuck (1890) noted it on Gros Cap Island in late July, 1889.

♀ July 13, Point aux Pins

Tyrannus tyrannus. EASTERN KINGBIRD.—A common species observed regularly throughout the summer. A set of fresh eggs was collected at Maclellann on June 16. The nest was situated on the jagged top of a dead pine stub in an extensive burned-over area.

♀ June 4, Laird

Myiarchus crinitus. CRESTED FLYCATCHER.—The Sault Ste. Marie region unquestionably approximates the northern range limit of this species although Magee (1923) records a pair observed near Gargantua on Lake Superior more than sixty miles north of our area. The species is rare in the region. Mr. Harry Graham observed a parent bird feeding its young on July 16, 1939, near Maclellann.

♀ June 13, Laird

Sayornis phoebe. EASTERN PHOEBE.—Observed regularly but not plentifully. Our daily records show totals of eight and ten on the two days trips were made to St. Joseph Island. Bridges, culverts, and abandoned buildings there provided suitable nesting sites. Seven was the largest daily total on the mainland. Among our breeding records one concerns a nest with four eggs on June 1, 1937. This was found by Mr. Harry Graham on the beam of a house at Sault Ste. Marie. During the summer of 1931 several nests were found in mid-June which contained young.

Juv. ♀ June 15, Laird
♀ June 15, Laird

Juv. ♀ July 15, Echo Lake

Empidonax flaviventris. YELLOW-BELLIED FLYCATCHER. — Observed rarely, at Desbarats, Laird and Point aux Pins.

♂ July 13, Point aux Pins

Empidonax trailli. TRAILL'S FLYCATCHER.—A fairly common species; from one to ten observed daily throughout the summer of 1931. Clumps of young poplar in burned-over areas were a favourite habitat.

♂ June 4, Laird

♂ June 19, MacLennan

Empidonax minimus. LEAST FLYCATCHER.—Recorded in numbers about equal to Traill's Flycatcher. It was found in both the alder thickets and in clumps of second-growth paper birch, at the forest edge.

♂ June 6, Laird

♂ July 4, MacLennan

Myiochanes virens. EASTERN WOOD PEWEE.—We found this species to be fairly common in the Sault Ste. Marie region in 1931. We recorded it daily from various sections of the area. As many as ten, usually males, were noted in a day. It has been recorded by Boies (1897), Magee (1922 and 1923), Fairbairn (1927) and Clarke and Ricker (1939) from this general latitude. Young of the year were observed by us, thus establishing a breeding record. In addition to old hardwood forests, the Wood Pewee occupied second growth poplar stands and paper birch copses.

♂ June 5, Laird

♂ July 2, MacLennan

♀ June 7, MacLennan

♂ July 9, Laird

Nuttallornis mesoleucus. OLIVE-SIDED FLYCATCHER.—Not plentiful but noted regularly in suitable situations, usually black spruce forests, or burned-over areas with rampikes and second growth. Two young of the year were observed with a parent bird by Mr. Shortt on July 8, thus establishing the breeding status of the species in the area.

♂ June 29, MacLennan

♂ July 13, Gros Cap

Otocoris alpestris. HORNED LARK.—The clearing of the land has undoubtedly been favourable to the Horned Lark population of this part of Ontario. The species was noted regularly by us throughout the summer of 1931. Though we recorded small numbers, certainly they were found to occur over a wide area, usually in cultivated fields. Males were still performing their nuptial flights on June 4. Young on the wing were noted by July 19.

♂ June 6, Laird

♀ July 4, MacLennan

♀ June 8, Laird

♂ July 6, MacLennan

♂ June 23, MacLennan

♂ July 20, MacLennan

Iridoprocne bicolor. TREE SWALLOW.—A common bird of the region and the most plentiful and evenly distributed species of swallow. A nest with a set of four fresh eggs was collected on June 11 from a fence

post bordering a hay-field. This site was characteristic for the species in the area. By July 6, flying family groups were in evidence but a larger congregation was not recorded until July 15.

♂ June 12, Laird

Juv. ♀ July 6, Maclellan

Riparia riparia. BANK SWALLOW.—As is characteristic of this species we found it distributed according to the presence of suitable nesting situations. Our records pertain to Little Rapids, Island Lake and Gros Cap. The latter place was the locale of a very large colony of Bank Swallows; examined on July 13. A man-made cut along the highway near Gros Cap produced a sand cliff on one side approximately one hundred feet high. A total of about four hundred Bank Swallow tunnels was estimated, all situated near the top. Probably half were not in use since the number of swallows flying about was estimated at two hundred. These were mostly adults, although some young were then on the wing. One other colony is situated in the bank of the St. Mary River on the border of the Garden River Indian Reserve, according to Mr. Harry Graham.

3 Juv. ♀ ♀ July 13, Gros Cap

♂ July 13, Gros Cap

2 ♀ ♀ July 13, Gros Cap

Hirundo erythrogaster. BARN SWALLOW.—Fairly common and generally distributed about farmland of the area. Buildings constituted the only nesting sites of the species as far as we could discover. Mr. Harry Graham of Sault Ste. Marie informs us that the species nests in the building of the Fair Grounds in the outskirts of the city of Sault Ste. Marie. Although families of young were on the wing somewhat earlier, July 15 marked the period when definite flocking of the species was first observed.

♂ June 15, Laird

Juv. ♀ July 15, Echo Bay

Petrochelidon albifrons. CLIFF SWALLOW.—A few were noted occasionally by us through the summer of 1931, near Portlock, Desbarats, Laird-Maclellan vicinity, Echo Bay, Iron River, Garden River and Sylvan Valley. The largest number on any one occasion was observed on July 20 at the last-mentioned place. The flock which was almost entirely made up of this species (4 Barn Swallows) was estimated at one hundred and fifty. Mr. Harry Graham informs us that three nests of this swallow were observed beneath the eaves of the Sault Ste. Marie Boat Club's building on June 9, 1938.

♀ June 15, Laird

Juv. ♀ July 20, Portlock

2 Juv. ♂ ♂ July 15, Echo Bay

Progne subis. PURPLE MARTIN.—A familiar species about the city of Sault Ste. Marie where we observed it on several occasions in 1931. Colonies are established about business buildings along the streets and in bird houses in gardens. Mr. Harry Graham informs us that young Martins out of the nest were still being fed on August 2, 1939.

Perisoreus canadensis. CANADA JAY.—On July 17 while making an extended trip via Desbarats Lake inland to visit a locally-renowned cave in the Precambrian rock, we heard a bird voice which was thought to be a Canada Jay. Dr. C. H. D. Clarke noted the species rarely during the summer of 1935 at Pancake Bay of Batchawana Bay which is closely adjacent to the northern limits of the area with which we are concerned. The only definite summer record we have for the species in this area is that of Starbuck (1890) who reports that he observed Canada Jays in late July of 1889 on the north side of a small island off Gros Cap in Lake Superior.

Cyanocitta cristata. BLUE JAY.—Not uncommon and generally distributed. Mr. Harry Graham found a nest with four eggs about eight feet from the ground in a spruce tree near MacLennan on May 16, 1937. We secured young of the year during 1931.

Juv. ♀ July 18, MacLennan

♂ July 18, MacLennan

♀ July 18, MacLennan

Corvus brachyrhynchos. AMERICAN CROW.—Probably the most conspicuous and plentiful of the larger birds of the area. It is entirely likely that the population of this species is now much larger than before settlement and cultivation. Young crows were not noted out of the nest until the fourth week of June. A flock of sixty American Crows was seen by Professor Coventry on July 8 and on July 30 we saw a flock of approximately two hundred, the largest reported.

♂ June 12, Laird

Penthestes atricapillus. BLACK-CAPPED CHICADEE.—Fairly common and observed in many sections of the Sault Ste. Marie region. The first nest discovered, in a paper birch stub thirty inches from the ground, contained four fairly well-fledged juveniles on June 10. Young accompanied by parents were observed for the first time two days later and thereafter during the summer.

♂ June 10, Laird

♂ July 3, Laird

♀ June 16, MacLennan

Juv. ♀ July 8, MacLennan

♂ June 25, MacLennan

Juv. ♂ July 8, MacLennan

Penthestes hudsonicus. BROWN-HEADED CHICKADEE.—Family groups, or individuals, were met with on five occasions during the summer of 1931. On July 8 we discovered a brood just as it had left the nest. The nest was situated five feet from the ground in a dead aspen stub within a fir-poplar forest.

2 ♂♂ July 6, MacLennan	♀ July 8, MacLennan
Juv. ♀ July 8, MacLennan	♀ July 20, Little Rapids
Juv. ♂ July 8, MacLennan	? July 20, Little Rapids

Sitta canadensis. RED-BREASTED NUTHATCH.—An uncommon species observed on six occasions during the summer of 1931. Probably the removal of old trees and the general reduction of the forest in the Sault Ste. Marie regions has affected the numbers of this nuthatch. (Incidentally, the White-breasted Nuthatch, *S. carolinensis*, was not discovered by us and indeed may not occur in the area, but it should be looked for by future observers. Boies (1897) recorded it as "a common bird throughout the year" on Neebish Island, St. Mary's River, Michigan.)

♂ July 3, Laird

Certhia familiaris. BROWN CREEPER.—Not observed until July 3, on which day we were exploring an extensive woods west of Laird. In a cedar swamp we accounted for eight individuals of this species, most of which were young of the year.

Juv. ♂ July 3, Laird

Troglodytes aedon. HOUSE WREN.—A common and generally distributed breeding species. House Wrens were more plentiful about settlements, the city of Sault Ste. Marie and towns of the region, than in wilder situations, but they were also found about farms, along forest edges and in old burns as well. A nest of six slightly incubated eggs, collected near MacLennan on June 12, was situated in a stump in an alder thicket in a pastured woodlot. The cast-off skin of a Red-bellied Snake was found incorporated into the structure. It seems probable that this species has increased in the region in the past thirty-five years. (See Boies, 1897.)

The series of specimens secured demonstrates that the race represented in the area is *parkmani* and they have been so recorded by Oberholser (1934).

♂ June 9, Laird	2 ♂♂ July 7, MacLennan
♀ June 15, Laird	♂ July 15, Echo Bay
♂ July 4, MacLennan	♂ July 22, MacLennan
Juv. ♀ July 6, MacLennan	

Nannus hiemalis. WINTER WREN.—Noted regularly in small numbers throughout the summer of 1931 in many parts of the area surveyed. Young of the year were collected.

♂ June 19, Maclellan Juv. ♂ July 3, Laird
Juv. ♀ July 3, Laird

Cistothorus stellaris. SHORT-BILLED MARSH WREN.—Four colonies of this species were discovered by us during the summer of 1931. Two were along the shore of Maskinonge Bay in the North Channel near Maclellan, one west of Laird near Pumpkin Point and a fourth at Desbarats. A "dummy" nest was found in one of the Maclellan sites but no breeding nest was discovered.

♂ June 5, Maclellan ♂ July 9, Maclellan

Dumetella carolinensis. CATBIRD.—Individuals were noted at Maclellan, Echo Bay and Iron River by our field party in 1931. The female collected, listed below, possessed the bare incubation area on the abdomen, indicating that it was probably established and breeding.

♀ July 15, Echo Bay

Toxostoma rufum. BROWN THRASHER.—Noted once during the summer of 1931, at Maclellan by Messrs. Shortt and Edmonds on June 9. The northern limits of range of this species occur in this latitude and the population of Brown Thrashers in the Sault Ste. Marie area probably varies from period to period. Furthermore the advent of the species this far north is probably of recent date. Boies (1897) does not mention it. Apparently the nearest Ontario record is that of Fairbairn (1927), who observed a pair at the Spanish River.

Turdus migratorius. AMERICAN ROBIN.—A very common breeding species throughout the region. The first young out of the nest was seen on June 6, 1931. Though irrelevant to a list of summer birds, it is of interest to record here the fact that an occasional American Robin can withstand, for a time at least, the winter of this latitude. One was observed regularly feeding on mountain ash berries in Sault Ste. Marie during the winter of 1924-25. However, on January 27, it was found dead and is now in the Museum's collection. A nest at Maclellan in a tall elm was at least 35 feet above the ground.

♂ June 11, Laird ♂ July 13, Point aux Pins
♂ June 22, Jocelyn Juv. ♂ July 13, Maclellan
♂ June 27, Maclellan

Hylocichla guttata. HERMIT THRUSH.—A common species in suitable forested areas throughout the region. It might be said that the Hermit Thrush constitutes one of the redeeming features of northern farming.

The farmer in the Sault Ste. Marie region endures long winters, late frosts and the rush of work in the short growing season, but in summer, at milking time and while the last of the day's chores are being done, he can listen to the vesper of the Hermit Thrush, indeed, probably several of them, as their songs intermix in their drift across his field from distant woodlots.

The writer's field record concerning certain notes uttered by the Hermit Thrush are as follows: "Heard the Hermit Thrush give its high-pitched, rather ventriloquial, whispered 'ssss,' like hissing through one's teeth; also a rather explosive 'quirt' and another note which was a rather slurred and harsh 'zwee'." The first-mentioned is like, or similar to, a note uttered by the American Robin, the Olive-backed Thrush and Wilson's Thrush, and would appear to be a kind of warning or quiet alarm, as judged from circumstances under which I have heard it.

A nest found on June 4 contained four fresh eggs. Another, found on July 24, contained three heavily incubated eggs. Probably the late clutch represented a second nesting consequent to an unsuccessful previous one, but two successful nestings of the species in this latitude may be possible.

Juvenile specimens collected were found to have a number of small red mites clustered about the anus.

(We did not discover the Wood Thrush, *Hylocichla ustulata*, in this area although it has been recorded for this latitude; see Clarke and Ricker, 1939; Van Tyne, 1938; and Boies, 1897.)

♀ June 4, Laird	♀ July 24, Laird
♂ June 4, Laird	Juv. ? July 27, MacLennan
♂ July 15, MacLennan	Juv. ♂ July 27, MacLennan

***Hylocichla ustulata*. OLIVE-BACKED THRUSH.**—A generally distributed species in suitable forested areas but not as plentiful as the Hermit Thrush.

♂ July 2, MacLennan	♂ July 8, MacLennan
---------------------	---------------------

***Hylocichla fuscescens*. WILSON'S THRUSH.**—Found to be fairly common throughout the Sault Ste. Marie region; about as numerous as the Olive-backed Thrush but not as plentiful as the Hermit according to our daily records. Flying young, two distinct broods, were observed on July 9 near the shore of Lake George.

The three specimens collected in this area are of interest in connection with the racial identity of the Wilson's Thrush population occupying the southern portion of central Ontario and the northern portion of southern Ontario. For several years material has been accumulating in the

R.O.M.Z. which tends to explain a statement of range in the 1931 edition of the A.O.U. Check-List. It is stated therein that *H. f. salicicola*, the Willow Thrush, occurs from southern British Columbia, etc., to southern Manitoba, etc. "(and apparently also Newfoundland)." The writer has reported (Snyder, 1938) that *salicicola* extends into extreme western Ontario. Furthermore, it seems evident from available material that the form *salicicola* extends eastward from the prairie provinces to Lake Superior in the vicinity of Thunder Bay. The range is here interrupted. The northern hump of Lake Superior virtually bisects the northern periphery of range of the species although scattered and very rare occurrences on the north shore may tend to suggest continuity. On the eastern end of Lake Superior, Wilson's Thrush is again to be found and thence southeastward to southern Quebec, etc. In this region the racial problem is somewhat confused. For example, one of the specimens from Sault Ste. Marie, a male, is typical of *H. f. salicicola*, while its known mate (determined in the field) can be referred to *H. f. fuscescens* (assuming that specimens from extreme southern Ontario with which it was compared are of the typical race). Many of the specimens examined from the Sault Ste. Marie latitude in Ontario are referable to *salicicola*. Quebec specimens and material from farther east, which would connect the Ontario region with Newfoundland, have not been seen but it appears possible that the two forms of this species are, or have been, more nearly distributed as northern and southern, rather than eastern and western, races. The confusion observed in specimens from south-central Ontario and from northern portions of southern Ontario may have arisen by a northward movement of the more southern form *fuscescens*, into the range of *salicicola*. It is well known that species have extended their range northward in this area. It is suggested that racial populations might do the same thing, eventually to break the genetical uniformity of the forms concerned. The subject of racial identity of Wilson's Thrush in this region has been discussed by Aldrich (1939).

♀ June 24, MacLennan

♀ June 5, Laird

♂ June 24, MacLennan

***Sialia sialis*.** RED-BREASTED BLUEBIRD.—A fairly common and generally distributed breeding bird of the region, a status probably favoured by deforestation, and pioneer farming. A nest with four incubated eggs was found as late as July 22 in 1931.

♂ June 16, Laird

***Regulus satrapa*.** GOLDEN-CROWNED KINGLET.—Rather uncommon for the region as a whole but more numerous in certain areas. Nine

were observed on a single day (July 13) in the pine barren and its borders at Point aux Pins. Young of the year were observed by Mr. Baillie on July 18, thus establishing a breeding record for the area. (Future observers in the region should look for the Ruby-crowned Kinglet, *Corthylio calendula*, which though not discovered by us may occur as a rare inhabitant of certain black spruce bogs. It is reported for Sugar Island, Michigan (Van Tyne, 1838).)

♂ June 4, Laird

♂ July 6, MacLennan

Bombycilla cedrorum. CEDAR WAXWING.—A common and generally distributed breeding species. Incubation of a set of five eggs found at Iron River on July 15 was well advanced.

♀ June 5, Laird

♂ July 13, Gros Cap

♂ July 8, MacLennan

Lanius ludovicianus. COMMON SHRIKE.—An uncommon breeding bird of cultivated areas. Noted by us at Garden River, Bar River, Echo Bay and MacLennan.

Juv. ♀ June 29, MacLennan

♀ July 8, MacLennan

♂ July 6, MacLennan

Sturnus vulgaris. COMMON STARLING.—A fairly common bird of settled sections in 1931 although not known to occur in the area prior to 1927. The first young of the year were noted by us on June 14. Flocks were seen after the third week of June with increasing regularity. Fifty was the largest total record on any one day. The earliest occurrence of the Starling in the region is based on a specimen now in the R.O.M.Z. picked up dead in Thessalon on February 10, 1927 (Baillie, 1928).

♂ July 3, Laird

Vireo solitarius. SOLITARY VIREO.—Noted once each in three sections of the area, near Laird, Iron River and Point aux Pins.

♂ June 6, Laird

Vireo olivaceus. RED-EYED VIREO.—A very common breeding bird of the area.

♂ June 10, Laird

Juv. ♀ July 27, MacLennan

Vireo philadelphicus. PHILADELPHIA VIREO.—Identified once, on June 9, near MacLennan and not again met with during the summer of 1931. Undoubtedly the area is on the southern fringe of the range of this species in Ontario.

Mniotilta varia. BLACK AND WHITE WARBLER.—A fairly common warbler throughout the region. The first nest discovered during the summer of 1931 was situated in a cavity of a fire-charred pine stub, 28 inches from the ground. The nesting entrance was a Pileated Woodpecker drilling made to gain access to a carpenter ant colony at the heart. The ants had made a vertical channel about four inches in diameter and their "saw-dust" had provided a floor at this point. Incidentally the female of this nesting pair performed the "broken-wing ruse" when her nest was discovered. The nest contained four fresh eggs on June 7. A second nest containing four young on June 23 was also situated in a tree cavity. This site was a rotten stump and the entrance to the nesting chamber was 8 inches from the ground.

♂ June 10, Laird	3 juv. ♂♂ June 23, MacLennan
Juv. ♀ June 23, MacLennan	Juv. ♀ July 24, MacLennan

Vermivora peregrina. TENNESSEE WARBLER.—A rare species identified on two occasions (June 2 and 13, Laird and MacLennan respectively) during the summer of 1931.

Vermivora ruficapilla. NASHVILLE WARBLER.—A fairly common breeding species well distributed throughout the area. As many as twenty individuals, usually singing males, were recorded on several days. Juveniles with parents were observed and collected.

♂ June 15, Laird	Juv. ♀ July 15, Echo Bay
Juv. ♂ July 7, MacLennan	

Compsothlypis americana. PARULA WARBLER.—Rare; the male specimen collected on June 9 seemed to be established in a habitat suitable to the species and repeatedly sang "zeeee-ee-ta," the quality dry and insect-like, the first portion ascending somewhat in pitch and the final syllable dropped and abrupt.

♂ June 9, Laird

Dendroica aestiva. YELLOW WARBLER.—Rather uncommon; our daily records for the summer of 1931 tabulate one or two, occasionally three, on approximately one-third of the days in the field. Our only breeding record is that of Mr. Harry Graham—a nest found near Sault Ste. Marie on June 30, 1939.

♂ June 5, Laird	♂ June 25, MacLennan
-----------------	----------------------

Dendroica magnolia. MAGNOLIA WARBLER.—Not uncommon; found most plentifully in the older, dry forests with a predominance of evergreens.

♂ June 4, Laird	♂ July 13, Point aux Pins
-----------------	---------------------------

Dendroica coronata. MYRTLE WARBLER.—Rather local in distribution usually favouring pine stands, consequently rather uncommon from the region as a whole. Found most plentifully on Long Point near Maclellan and at Point aux Pins. Parents were observed carrying food to their young, thus establishing the local breeding status of the species.

♂ June 10, Laird Juv. ♀ July 27, Maclellan
♀ July 6, Maclellan

Dendroica virens. BLACK-THROATED GREEN WARBLER.—A common and well distributed species. Twenty-four were noted on July 9. The immature specimen listed below had almost completely lost its juvenile body plumage and acquired its first winter plumage, but in all probability it had been reared locally. Young still being fed by parents were observed near Maclellan as late as August 11 in 1938 by Mr. Harry Graham.

♂ June 10, Laird Imm. ♂ July 28, Maclellan

Dendroica fusca. BLACKBURNIAN WARBLER.—A fairly common species observed regularly throughout the summer. A nest was found on June 15 by Mr. Shortt in a balsam fir, near the main stem and top, approximately 35 feet from the ground. It contained two Cowbird's eggs only.

♂ June 9, Laird ♀ June 22, Jocelyn Twp., St. Joseph Is.
♀ June 15, Laird ♂ July 4, Maclellan

Dendroica pensylvanica. CHESTNUT-SIDED WARBLER.—A common and generally distributed breeding species. Mr. Harry Graham found a nest containing a Cowbird's egg in a hazel shrub on June 25, 1939. We observed juveniles in July, 1931.

♂ June 11, Laird Juv. ♀ July 13, Gros Cap
♂ July 7, Maclellan

Dendroica castanea. BAY-BREASTED WARBLER.—A rare warbler in the region. A pair was observed in a black spruce stand near Maclellan on July 8 and one was noted at Point aux Pins on July 13.

Seiurus aurocapillus. OVEN-BIRD.—A common species. Although found in all but the wetter forested areas, it was most plentiful in poplar-fir and old hardwood stands. One nest examined was within a bare, open space in a poplar-fir forest. The appearance of the immediate site was as if the matted leaves on the forest floor had been cleft along a line, lifted and propped up, thus providing a cave in which the nest was built.

♂ June 4, Laird Juv. ♂ July 3, Laird
Juv. ♂ July 2, Maclellan ♀ July 18, Maclellan
♂ July 2, Maclellan Imm ? July 22, Maclellan

Seiurus noveboracensis. NORTHERN WATER-THRUSH.—Our daily records include one individual of this species noted on July 2 and one on July 21. Both observations were made on the shore of the St. Joseph Channel. The great rarity of the Water-Thrush in the area is apparently due to the absence of suitable habitat.

Oporornis philadelphia. MOURNING WARBLER.—A common and well distributed warbler in the Sault Ste. Marie region. Young just out of the nest were noted and one collected.

♂ June 5, Laird	Juv. ♂ July 6, MacLennan
♂ June 8, Laird	♀ July 24, Echo Bay
♂ July 6, MacLennan	

Geothlypis trichas. MARYLAND YELLOW-THROAT.—Found sparingly here and there where suitable habitats existed. Small marshes found along the shore of the St. Joseph Channel and wet grass flats and alder swales along the St. Mary, Iron, and Echo Rivers, etc., were occupied by the species. Ten were observed on July 9. A nest containing four fresh eggs was found on June 29.

♀ June 5, Laird	2 ♂♂ July 9, Laird
♂ June 5, Laird	♂ July 15, Echo Bay
♂ June 13, Laird	Juv. ♂ July 16, Desbarats
♀ June 29, MacLennan	Juv. ♀ July 27, MacLennan

Wilsonia canadensis. CANADA WARBLER.—Not uncommon; observed regularly but not in large numbers.

♂ June 4, Laird	♂ June 12, Laird
-----------------	------------------

Setophaga ruticilla. AMERICAN REDSTART.—A very common warbler of the region, perhaps the most plentiful representative of the Family. Its numbers and regular distribution in the area was approached only by the Ovenbird, Chestnut-sided, Mourning and the Black-throated Green Warblers, in the order named. Six nests with eggs were found during the first two weeks of June. One had been parasitized by the Cowbird; another contained a clutch of five eggs which is somewhat unusual. Four out of the six nests were situated in alder shrubs from four to eight feet from the ground. Concerning the others, one was built in choke cherry and the other in mountain maple.

♀ June 5, Laird	Juv. ? July 13, Gros Cap
♂ June 6, Laird	♀ July 18, MacLennan

Passer domesticus. ENGLISH SPARROW.—Observed daily during the summer of 1931 and found to be established about settlements and many

of the farmsteads. Nests which already contained young were found by June 2. Buildings constituted the usual sites for nesting but occasionally they were found elsewhere. One nest was located in the hollow top of a fence post, the peculiarity of the site being that the post had broken off at the ground and was supported in a low position by the slack strands of the wire fence. The entrance hole and nest were a mere few inches from the ground and circumstances suggested that the post had been in this position at the time the situation was chosen by the sparrows.

One juvenile specimen secured is of interest. The basal portion of the primaries and secondaries are whitish on both webs. Normally the shaft and terminal portion of these feathers are grey-brown with a restricted whitish margin on the basal portion of the inner web. Further, the grey-brown terminal half of the primaries and secondaries of the peculiar specimen in question present a narrowly barred appearance. Examination under 12 \times magnification shows that the barring is an effect produced by an irregularity of the barbules along a transverse line. They are depressed against the barbs and to some extent lack pigmentation. Furthermore, where the bar pattern crosses the shaft, there is a slight buckling of the shaft, or a perceptible weakening of its structure. Another abnormality concerns the upper wing coverts which are very short and under-developed compared to normal specimens of about the same age. These feathers also show a barred effect. Normally these coverts would be sufficiently long to extend over the basal white portion of the flight feathers. The white area on the wing of the abnormal specimen is consequently particularly conspicuous due to exposure. One additional feature which appears to be abnormal is that the egg-tooth, or a considerable portion of it, is still present on this specimen although the bird was approximately two weeks old. Although comments on this specimen can be little more than descriptive, it may be stated that the under-developed wing-coverts, the five or six transverse bars on the flight feathers which seem to constitute lines of weakness in the feather structure, and the reduced pigmentation in the basal half of the flight feathers are an interesting combination of expressions of deficiencies.

♂ June 18, MacLennan

Juv. ♂ June 19, MacLennan

Dolichonyx oryzivorus. BOBOLINK.—Noted regularly throughout the summer, though not plentifully. Finding the species in meadows on St. Joseph Island, at MacLennan, Garden River, Iron River, Sault Ste. Marie and Point aux Pins demonstrates the general establishment of the species in the area which lies close to the northern limits of range in the province. Young just out of the nest, found in a hay meadow near

our camp at Maclellan, were collected. A male taken July 18 had already commenced to assume its winter plumage.

We were not successful in determining when this species spread into the Sault Ste. Marie region but no doubt it was at an early date. Boies (1897) recorded it for a neighbouring area in Michigan in 1893.

♂ June 6, Laird	♀ July 18, Maclellan
♂ June 16, Maclellan	2 Juv. ♂♂ July 18, Maclellan
♂ July 6, Maclellan	♂ July 18, Maclellan
Juv. ♀ July 18, Maclellan	Juv. ♀ July 28, Maclellan

***Sturnella magna*.** EASTERN MEADOWLARK.—Boies (1897) reported that the Meadowlark bred sparingly on Neebish Island (Michigan) in the period 1892-94. Mr. L. G. Davidson, a farmer, near Maclellan, told us that he found the Eastern Meadowlark established in the area in 1900 and it could well have been there previous to that date. We found pairs or singing males here and there throughout farmland of the region but the species was not particularly plentiful. Although breeding was not definitely established, pairs were noted in certain meadows throughout the summer and they were surely not there for any other purpose. Subsequently Mr. Harry Graham found a nest with four eggs at Sault Ste. Marie on July 1, 1937.

♀ June 12, Laird	♂ June 22, Jocelyn Twp., St. Joseph Is.
♂ June 12, Laird	♀ July 8, Maclellan

***Sturnella neglecta*.** WESTERN MEADOWLARK.—Mr. L. G. Davidson, a farmer, near Maclellan, knew this species well, having lived in the Canadian West where it was a plentiful and familiar bird. He recalled that he first noticed its characteristic song in the Sault Ste. Marie region about 1921 or 1922, a date which may well mark its advent into the area. The upper peninsula of Michigan would seem to present a highway for the eastern extension of range of western forms. The Western Meadowlark has not increased markedly and is decidedly less common than the eastern species. One or two were noted at each of the following situations during June and July—near Sault Ste. Marie, Bar River, Garden River, and Maclellan.

♂ June 22, Maclellan

***Agelaius phoeniceus*.** RED-WINGED BLACKBIRD.—A marsh on the edge of Maskinonge Bay near our camp supported a colony of ten or fifteen pairs of redwings, and the species was found established in marshes in a dozen sites scattered along the shores of rivers and lakes throughout the region. Nests in the colony near camp contained young on June 5 but others contained eggs as late as June 16.

The average measurements of four adult males collected near camp are as follows,—Length 224, wing 122, tail 92.7, length of culmen 21.7, depth of bill at base 10.8, weight (of two) 65.5. A fifth male from the same colony measures L. 238, W. 126, T. 99, Cul. 26, depth at base 12.5, Wt. 71. This latter specimen is extremely large and well within the limits of size ascribed to the form, *A. p. arctolegus*. The other males conform to the dimensions of the typical race. This would serve to illustrate that an individual specimen cannot be positively ascribed to a size-race, particular in the case of Red-wings where racial sieving is apparently in an incipient stage (see Taverner, 1939).

♂ June 5, MacLennan	Juv. ♀ June 20, MacLennan
♀ June 16, MacLennan	2 ♂♂ June 20, MacLennan
2 ♂♂ June 16, MacLennan	Juv. ♀ June 20, MacLennan

Quiscalus quiscula. CROW BLACKBIRD.—Noted commonly and regularly during most of June, but from June 24 their numbers became fewer and observations were more intermittent. During the second week of July they were rarely observed. No pronounced flocks were seen until July 27. These observations indicate the evacuation of nesting areas rather completely soon after the young are on the wing. If the species does not actually start its migration in early July and leave the area, we failed to discover their concentration points during this period.

A nest found on a beam of an open shed in farmland contained three small nestlings on June 2.

♀ June 13, Laird	Juv. ♀ June 15, Laird
------------------	-----------------------

Molothrus ater. COWBIRD.—Common and conspicuous through the month of June; observed more irregularly after July 5, pronouncedly so after July 9. No new or rare instances of parasitism were discovered but among the usual hosts we have already mentioned the Blackburnian Warbler, Chestnut-sided Warbler and Redstart. The species has doubtless increased with the clearing of the land.

♂ June 6, Laird	♀ July 8, MacLennan
Juv. ♀ July 2, MacLennan	♂ July 15, Echo Bay

Piranga erythromelas. SCARLET TANAGER.—Rather uncommon but one or two were noted about one-third of the days afield during the summer of 1931.

♂ June 6, Laird	♂ July 9, Laird
-----------------	-----------------

Hedymeles ludovicianus. ROSE-BREASTED GROSBEAK.—An uncommon breeding bird of the region. We recorded pairs or families on five occasions in four distinct sections of the region during the summer of 1931. A nest containing four slightly fledged young was found in a

maple forest, a favoured habitat, in a fork of the thin terminal branches of a sugar maple, fifteen feet from the ground.

♀ June 22, Jocelyn Twp., St. Joseph Is. 4 nestlings (3 alcoholic) June 29, Gordon Lake
 ♂ June 22, Jocelyn Twp., St. Joseph Is. ♂ July 24, Echo Bay
 ♀ June 29, Maclellann Juv. ♂ July 24, Echo Bay

Passerina cyanea. INDIGO BUNTING.—Observed fairly regularly and not uncommonly throughout the summer and found breeding. Brushy pastures and the edges of forests and in burns were favoured habitats of the species.

♂ June 6, Laird	♂ July 18, Maclellann
♂ June 11, Laird	♂ July 23, Maclellann
2 ♂♂ July 2, Maclellann	Juv. ? July 27, Maclellann
♀ July 2, Maclellann	Juv. ♂ July 27, Maclellann

Hesperiphona vespertina. EVENING GROSBEAK.—On July 23 two of these birds flew over us on the road at Laird, coming from the old, heavy forest in that area. They were collected and proved to be a pair. The testes of the male were beginning to atrophy, being yellowish in colour and 7 mm. in length. The female showed signs of breeding, the belly being bare and calloused.

The exact site where these birds were collected is approximately fourteen miles from Sault Ste. Marie, Michigan, as the grosbeak flies. The latter place-name is the type locality of the form but the type was winter-taken, indeed the species was not known to breed in the east until comparatively recent years. Additional records of the species for the Sault Ste. Marie region, Ontario, have come to hand from Mr. M. J. Magee. He observed four adults and three young on August 1, 1935, and had previously recorded the observation of a male at Goulais Bay on August 4, 1922 (Magee, 1923).

♀ July 23, Laird	♂ July 23, Laird
------------------	------------------

Carpodacus purpureus. COMMON PURPLE FINCH.—A fairly common and generally distributed breeding bird of the region.

♂ June 4, Laird	♀ July 24, Echo Bay
♂ June 22, Jocelyn Twp., St. Joseph Is.	♂ July 24, Echo Bay
♂ June 26, Maclellann	Juv. ♂ July 27, Maclellann
♀ July 15, Echo Bay	

Spinus pinus. PINE SISKIN.—Rather scarce; met with on only four occasions during the summer of 1931. A young of the year was collected in midsummer.

Juv. ♂ July 9, Laird

Spinus tristis. AMERICAN GOLDFINCH.—A very common species noted daily throughout the summer. Three nests, all in the course of construction, were all found on the same day, July 15, in three distinct localities.

♀ July 4, Laird

♂ July 18, MacLennan

Loxia leucoptera. WHITE-WINGED CROSSBILL.—Individual birds were observed twice during the summer of 1931, one on July 20 at Little Rapids and one on July 22 at Echo Bay.

Pipilo erythrophthalmus. EASTERN TOWHEE.—An uncommon species which was observed on eight occasions during the summer of 1931 in widely separate areas—Gros Cap, Echo Bay, Bar River, and MacLennan. Brushy hillsides usually where mixed and hardwood forests had been recently removed were the usual habitats.

July 8, MacLennan

♂ July 18, MacLennan

♂ July 15, Echo Bay

Passerculus sandwichensis. SAVANNAH SPARROW.—A very common breeding bird of the region, one which no doubt is much more numerous now than it was before the land was cleared. One day's total, July 8, was sixty-five. A nest found on June 2 contained three fresh eggs and a clutch of four found on June 12 was also fresh.

The series of skins collected conforms to the description of *P. s. mediogriseus* of Aldrich (1940). The graded variation of eastern Savannah Sparrows as disclosed by Aldrich and the findings of others making similar studies, point to an ultimate consideration of the clines of Huxley (1939) in taxonomy.

2 ♂♂ June 5, Laird

4 ♂♂ June 25, MacLennan

♀ June 12, Laird

Juv. ♀ July 12, MacLennan

♂ June 16, MacLennan

♀ July 20, Little Rapids

♂ June 16, Laird

Poocetes gramineus. VESPER SPARROW.—A common breeding species found throughout the area where fields and dry open pastures afforded suitable habitat. Although well incubated eggs were found as early as June 6, in 1931, fresh eggs were found late in the same month. One clutch which is remarkable because it consists of six eggs, was slightly incubated on July 5. This latter set is very uniform in colour and pattern. An egg in the oviduct of a female collected on July 22 is our latest nesting evidence.

2 ♂♂ June 4, Laird

♀ June 23, MacLennan

♀ June 6, Laird

♂ July 4, MacLennan

♂ June 11, Laird

♀ July 22, MacLennan

♀ June 16, MacLennan

Juv. ♀ July 25, MacLennan

3 ♂♂ June 22, Jocelyn Twp.,
St. Joseph Is.

♂ July 25, MacLennan

Junco hyemalis. SLATE-COLOURED JUNCO.—Fairly common and observed regularly throughout the area. Although young out of the nest were noted as early as June 9, fresh eggs were collected on July 4.

♂ June 5, Laird	♂ July 6, MacLennan
Juv. ♂ July 9, Laird	Juv. ♂ July 13, Gros Cap
♂ June 12, Laird	Juv. ♀ July 13, Point aux Pins

Spizella passerina. CHIPPING SPARROW.—A very common breeding species. The song of the Chipping Sparrow is known to be variable, i.e. its quality may be musical or "wooden," but perhaps it has not been emphasized that it can actually overlap the quality and pattern of the song of the Clay-coloured Sparrow. The song of a male heard and collected on July 15 was dull, insect-like in quality and broken into two phrases, the second about a musical third higher than the first. In other words it was very like one song of the Clay-coloured Sparrow.

A newly completed nest without eggs was found on June 5; two nests each with four fresh eggs were found on June 7. The first young out of the nest were noted on June 20. Nests with fresh eggs were found as late as July 2.

♂ June 6, Laird	♂ July 8, MacLennan
♂ June 19, MacLennan	2 ♂♂ July 15, Echo Bay
Juv. ♂ June 20, MacLennan	Juv. ♀ July 20, Little Rapids
♀ June 25, MacLennan	♂ July 22, MacLennan
2 juv. ♀♀ July 6, MacLennan	

Spizella pallida. CLAY-COLOURED SPARROW.—On June 26 an individual of this species was seen and heard near Laird. It was discovered in a clump of small balsam poplars in an open scrubby pasture and although collected, the specimen was not recovered, one of those disappointing events all too common to the collector. However, on July 20, a breeding colony of this species was found at Crates Dam near Little Rapids. A total of fifteen individuals was tabulated including adults and young out of the nest. The situation was a hot, sandy slope, an old pine barren from which most of the trees had been removed. There was the occasional seedling or old white pine, with here and there clumps of young aspen poplar. The area was largely overgrown with Saskatoon berry, sweet fern, bush honeysuckle, blueberries and bracken fern. This is the first known breeding colony in Ontario east of the Port Arthur district and suggests again the probable extension of western forms into the Sault Ste. Marie region by way of the upper Michigan peninsula.

Juv. ? July 20, Little Rapids	3 ♂♂ July 20, Little Rapids
Juv. ♀ July 20, Little Rapids	

Zonotrichia albicollis. WHITE-THROATED SPARROW.—A very common species. A number of nests with eggs were found during the summer of 1931. Young out of the nest were first noted on June 23.

♂ June 10, Laird	2 ♀ ♀ July 8, MacLennan
♀ June 11, Laird	♀ July 13, Point aux Pins
♂ June 11, Laird	Juv. ♀ July 17, Desbarats
3 nestlings (alcoholic) June 12, Laird	♂ July 22, MacLennan
Juv. ♂ July 4, MacLennan	Juv. ♂ July 25, MacLennan

Melospiza georgiana. SWAMP SPARROW.—Not uncommon for the region as a whole though restricted to suitable sites along the borders of marshes, lakes and streams. A nest with three fresh eggs was collected on June 11, 1931.

♀ June 13, Laird	Juv. ♂ July 15, MacLennan
♀ July 6, MacLennan	

Melospiza melodia. SONG SPARROW.—A very common breeding species throughout the region. Young out of the nest were observed as early as June 6, although the majority of Song Sparrows did not nest so early. A set of five well-incubated eggs collected on June 11 would seem to represent an average date for this latitude. A nest observed on July 8 contained four incubated eggs.

A recent study of the races of Song Sparrows in Ontario (Fleming and Snyder, 1938) shows that the Sault Ste. Marie region, though not mentioned specifically, constitutes a hub where the local population can be influenced by three races. To the west and north (the upper peninsula of Michigan and over the top of Lake Superior) *M. m. juddi* ranges; to the south and southeast (Michigan and Bruce County, Ontario) *M. m. euphonia* has been recognized; and to the east and northeast, *M. m. melodia* is found. The Sault Ste. Marie specimens cannot be referred definitely to any of these forms.

♀ June 4, Laird	4 ♂ ♂ June 19, MacLennan
Juv. ♂ June 6, Laird	♀ July 4, MacLennan
♀ June 11, Laird	♂ July 6, MacLennan
♂ June 11, Laird	♂ July 22, MacLennan
♀ June 19, MacLennan	Juv. ♂ July 24, MacLennan

LITERATURE CITED

- AGASSIZ, LOUIS. 1850. Lake Superior: its physical character, vegetation, and animals, compared with those of other and similar regions. Boston.
- ALDRICH, JOHN W. 1939. Geographic variations of the veery. *Auk*. **56**: 338-39.
- . 1940. Geographic variations in eastern North American savannah sparrows. *Ohio Journ. Sc.* **40**: 1-8.

- BAILLIE, JAS. L., Jr. 1928. Further notes on the starling in Ontario. Can. Field-Nat. **42**: 177.
- and PAUL HARRINGTON. 1936. The distribution of breeding birds in Ontario. Part I, Trans. Roy. Can. Inst. **21**: 46.
- BELL, ROBERT. 1861. Catalogue of birds collected and observed around Lake Superior and Huron in 1860. Can. Nat. 2nd Geol., **6**: 274.
- BOIES, MAJ. A. H. 1897. The birds of Neebish Island, St. Mary's River, Michigan. Bull. Mich. Orn. Club. **1**: 17-20 and 27-29.
- CLARKE, C. H. D. and WILLIAM E. RICKER. 1939. The birds of the vicinity of Lake Nipissing, Ontario. Contrib. Roy. Ont. Mus. Zool. **16**: 11.
- FAIRBAIRN, H. W. 1927. Bird notes from Algoma District, Ontario. Can. Field-Nat. **41**: 150-52.
- FLEMING, J. H. and L. L. SNYDER. 1939. On *Melospiza melodia* in Ontario. Occ. Papers, Roy. Ont. Mus. Zool. **5**.
- HENRY, ALEXANDER. 1809. Travels and adventures in Canada and the Indian territories between the years 1760 and 1776. New York. P. 61.
- HUXLEY, JULIAN S. 1938. Clines: an auxiliary taxonomic principle. Nature. **142**: 219-21.
- "KINGFISHER"—MR. HICKMAN. 1889. Camps of the Kingfisher III. Forest and Stream. **33**: 28.
- MAGEE, M. J. 1922. Bird notes from the District of Algoma, Ontario. Can. Field-Nat. **36**: 153-54.
- 1923. Bird notes from the north shore of Lake Superior, near Gargantua, Algoma District, Ontario. Can. Field-Nat. **37**: 145-46.
- 1923. Notes from Sault Ste. Marie, Mich. Auk, **40**: 337.
- OBERHOLSER, HARRY C. 1934. A revision of North American house wrens. Ohio Journ. Cc. **34**: 96.
- PINNEY, M. E. and J. F. MACNAUGHTON. 1937. Some early bird records of Wisconsin and neighbouring territory to the west and north (1896-1900) and Indiana (1876-1877). Trans. Wis. Acad. Sc., Arts and Letters, **30**: 115.
- PREECE, W. H. A. 1923. Hummingbird caught by burdock. Can. Field-Nat. **37**: 158.
- 1924. The concentration of migratory birds at Sault Ste. Marie, Ontario. Can. Field-Nat. **38**: 9-10.
- SNYDER, L. L. 1938. The summer birds of western Rainy River District, Ontario. Trans. Roy. Can. Inst. **22**: 201.
- STARBUCK, ALEXANDER. 1890. On the north shore, II. Forest and Stream, **34**: 49.
- TAVERNER, P. A. 1939. The red-winged blackbird of the Canadian prairie provinces. Condor. **41**: 244-46.
- VAN TYNE, JOSSELYN. 1938. Check-list of the birds of Michigan. Occ. Papers Mus. Zool. Univ. Mich., No. **379**.

REPTILES AND AMPHIBIANS OF THE SAULT STE. MARIE
REGION, ONTARIO

By E. B. S. LOGIER

FOREWORD

The list of reptiles and amphibians presented in this paper is doubtless incomplete, and further work in the region would very probably reveal the presence of additional species. Several species of snakes that we did not find in 1931 have since been reported to us on good authority.

Measurements are all from preserved material. The tail length of salamanders was measured from the posterior margin of the vent. Frogs were laid on their backs and the body straightened by pressure on the throat and pelvic regions, the combined length of the head and body (referred to as head-body length) was measured with dividers from the tip of the snout to the posterior surface of the ischial symphysis. The head length was measured with dividers from the tip of the snout to the posterior margin of the tympanic ring. The hind-leg-to-heel length was obtained by pinning the specimen down and pinning the leg out straight at a right angle to the body, with the foot sharply flexed at the heel; the length was taken from the ischial symphysis to the convexity of the heel. The foot length, when stated, is that of the whole foot including the tarsal and metatarsal bones, measured from the convexity of the heel to the tip of the fourth toe.

Measurements of snakes are only approximate, for while they were pinned down, starting at the head, and straightened as much as possible, there is bound to be some distortion of length. When noting the scutellation of the head in snakes, numbers joined by a plus sign refer to scales on the same side of the head, as, temporals 1+2, indicating one scale in the first row and two in the second on the same side. The length and width of turtle shells were measured in a straight line through the greatest dimensions, not over the curvature of the carapace.

The treatment of the leopard frogs and wood frogs is provisional. Referring of the leopard frogs to *Rana pipiens*, and the wood frogs to *Rana sylvatica* without subspecific distinction, may draw criticism, but these two groups are in a state of confusion. The characters given by Cope (1889, 403-406) for *Rana brachycephala*, and those summarized by Kauffeld (1937, 84-87) as being distinctive of *R. pipiens* or *R. brachycephala* are not satisfactory when applied to Ontario material. The wood frogs are in an equally dubious state, with Ontario material again mixing up characters assigned by various authors to *R. sylvatica* or *R. cantabrigensis*.

Until satisfactory characters have been established for each of these forms and associated with geographical ranges, we see no good reason for any other procedure than that provisionally adopted here.

ACKNOWLEDGMENTS

The writer gratefully acknowledges the kind assistance rendered from time to time by the other members of the museum party, i.e., Messrs. L. L. Snyder, John Edmonds, J. L. Baillie, T. M. Shortt and Duncan MacLulich; also Professor A. F. Coventry, who spent some weeks at our camp. Mr. R. H. Burns, of Sault Ste. Marie, furnished us by letter with several records of species that otherwise would have been omitted, and these are very much appreciated.

REPTILES

Opheodrys vernalis vernalis (Harlan). SMOOTH GREEN SNAKE.—We did not find this snake in the area covered although we expected to do so. Mr. Burns writes us that it "is quite in the southerly part of Algoma District, including St. Joseph Island. We have noted quite a few specimens about 15'' to 18'' in length, around our camp on the north end of St. Joseph Island, near Desbarats, and have also observed specimens here in Sault Ste. Marie, and at other points in the southerly part of the Mississauga region."

Lampropeltis triangulum triangulum (Lacepede). MILK SNAKE.—We are indebted to Mr. Burns for a report of this species. He writes: "In July 1937 I saw a milk snake in the Township of Mack on a portage between Lake Magog, (Granary Lake), and Lake of the Mountains, (Lake Dubourne), approximately seven miles N.E. of the town of Blind River. The specimen was about three feet long, being light gray with the customary dark spots. It slowly crossed the portage in front of me when I almost accidentally stepped on it. I was quite surprised to see it as it was really the first milk snake that I definitely recalled seeing in this part of northern Ontario up to that time."

Natrix sipedon sipedon (Linne). NORTHERN WATER SNAKE.—We are again indebted to Mr. Burns for our only information about this snake in Algoma District. He writes: "From time to time we have noted odd specimens of common water snakes between Batchawana Bay, Lake Superior, about 30 miles north of here, and eastward along the St. Mary River to the North Channel of Lake Huron. The specimens that we see as a general rule are not much more than 24'' to 30'' in length. They are not nearly so common as the garter snakes and I personally

never saw nor heard of one up here as large as specimens that I have noted at the eastern end of Lake Ontario in Frontenac County"

Storeria occipitomaculata (Storer). RED-BELLIED SNAKE.—This, according to our observations, was the commonest snake in the area worked by our party. It was taken in the vicinity of MacLennan, Laird and at Lake George. Mr. Burns reports it from St. Joseph Island, from where he sent us a specimen (and from near Lake Achigan at mile 45 on the Algoma Central Railway, where Mrs. Burns had seen many). We collected twenty-seven specimens ranging in length from 133.5 to 286 millimeters. The scutellation was mostly: preoculars 2; postoculars 2; temporals 1+2; upper labials 6; lower labials 7; dorsal rows 15; ventrals, males 117-123½, females 121-129; subcaudals, males 45-51, females 37-44. In two specimens the lower preocular of one side was fused with the postnasal. Upper labials were occasionally 5 or 7 on one side; one specimen has 7 on both sides. Lower labials are occasionally 6 on one side, and in two cases there are 5 and in another 8 on one side (the latter number resulting from the division of the 3rd scale). Five specimens have two extra short scale rows on the neck, bringing the anterior count to 17. Two specimens had a small scale in the loreal region on one side.

The dorsal colour of these snakes varied from pale grayish brown through rich reddish brown or dark slate to almost black; the belly from strong brick-red to very pale rose pink. The anterior ventrals were gray in a few specimens.

Thamnophis sirtalis sirtalis (Linne). EASTERN GARTER SNAKE.—This, next to the red-bellied snake, was the snake most often seen. It was taken in the vicinity of MacLennan, Laird, Lake George, Gordon Lake and at Gros Cap. It was reported by Williamson (1907, 137) from Searchmont. There are twenty specimens in our collection, of which six are males. They range in length from 281 to 786 millimeters. The scutellation was mostly as follows: preoculars 1; postoculars 3; upper labials 7; lower labials 10; temporals 1+2, but often irregular; dorsal rows 19-17; ventrals, males 149-158, females 148-151; subcaudals, males 67-79, females 61-74. Some irregularities in scutellation occur: 4 postoculars occur on one side in one specimen. One specimen has 8 upper labials on one side. Three have 9 lower labials on one side, and one has 9 on both sides; 8 occur once on one side. There are 21 scale rows on the neck region in five specimens, extending back as far as the 8th, 10th and 11th ventrals; 20 occur in two, extending back to the 8th ventral.

The colour and striping of these snakes was normal, showing about

the usual extent of variation with black or brown ground colour and the striping bright or dull yellow, or brownish, and occasionally with red anteriorly on sides. One specimen was nearly black with the striping obscure, the belly dark gray and the chin white.

Clemmys insculpta (Le Conte). WOOD TURTLE.—There is a record of the wood turtle from Searchmont, northeast of Sault Ste. Marie (Williamson 1907, 138). This, and its occurrence in the northern peninsula of Michigan where it was reported from Schoolcraft County by Ruthven, Thompson and Gaige (1928, 146, 149), make it seem probable that additional records may yet be expected from the Sault Ste. Marie region.

Chrysemys bellii marginata Agassiz. WESTERN PAINTED TURTLE.—The painted turtle was found occasionally. We have two from St. Joseph Channel near Maclellan and one from the vicinity of Echo Lake. There is also in our collection a single egg found by His Honour Judge E. Lovering of Toronto at Copp Lake on July 11, 1940, lying in the water at the shore, and brought by him to the museum.

The Echo Lake specimen had a very large plastral dark blotch approaching that of *C. b. bellii* in character; the greatest width of the blotch was .673 of the width of the plastron, and that at the center was .495. The carapace of this specimen measured 170×133 millimeters, which is larger than average for *C. b. marginata*. The St. Joseph Channel specimens were normal *marginata*. The carapace measurements of these were 156×114 and 151×110 millimeters; the figures for the width of the plastral dark blotches of these are, respectively: greatest width .450 and .500, width at center .274 and .338 of the width of the plastron. The dorsal markings in all cases were those of *marginata* and the neck and limbs were marked with red.

Since *C. b. bellii* occurs throughout the northern peninsula of Michigan (Ruthven, Thompson and Gaige 1928, 159, 160), and at Lake Nipigon, Thunder Bay District, Ontario, intergrades might be expected in territory eastward from Lake Superior.

AMPHIBIANS

Necturus maculosus maculosus (Rafinesque). MUDPUPPY.—This salamander was recorded by Agassiz (1850, 382) from Sault Ste. Marie. Its occurrence in both northern and southern Michigan and at Isle Royal (Ruthven, Thompson and Gaige, 1928, 13, 15) suggest that the lack of southern Algoma records since 1850 are the result of neglect rather than of geographical distribution.

Triturus viridescens viridescens (Rafinesque). NEWT.—The newt was found sparingly in the vicinity of Maclellan. Only nine specimens were taken (four males, five females); seven were found in the weedy edge waters of St. Joseph Channel, the other two were collected in a swale in a grain field near Maclellan. The following measurements were obtained: males, average total length 98.3 millimeters with extremes of 85 and 104.8; average tail length .490, extremes .450 and .512 of the total length. Females, average total length 80.7 with extremes of 65.5 and 102 millimeters; average tail length .488, extremes .473 and .511 of the total length. The tail crests of the males were well developed, giving an average total depth to the tail of .118 of the total length of the animal with extremes of .110 and .130. The horny ridges and toe tips were pronounced. The specimens were collected in June.

Ambystoma jeffersonianum (Green). JEFFERSON'S SALAMANDER.—Metamorphosing specimens of this species of from 42 to 47.5 millimeters and advanced larvae were collected on July 6 from a partly shaded pond in a wood lot near Maclellan; also younger larvae from 19 millimeters up, and presumably the same species. *Ambystoma* larvae were collected in the vicinities of Maclellan and Desbarats on several dates from June 8 to July 6, but no adults were found. Larvae collected on June 8 in a muddy pasture pond devoid of vegetation and totally unshaded ranged in length up to 39.5 millimeters, the majority exceeding 23. On July 2 the maximum length of larvae in this pond was 50 millimeters. Two larvae from this pond transformed at 53.4 and 55.2 millimeters by July 13. They were *jeffersonianum*. The costal grooves, including the axial and inguinal, were 13 in most larvae examined, and 14 in a few. There were two or three with 12 grooves.

Plethodon cinereus (Green). RED-BACKED SALAMANDER.—This salamander was collected in the vicinity of Maclellan on dates from June 6 to 27. Ten specimens were taken, three had broken and partly regenerated tails, the others ranged in total length from 71 to 83 millimeters and averaged 77. The costal grooves were 17, 18 and 19. One specimen was dark without a red dorsal stripe; all the others had this stripe. A clutch of seven eggs was found on June 27 in a decaying pine long in the woods near Maclellan. Of the specimens with complete tails, six males averaged 77.9 millimeters of which the tail was .478; the single female was 72.3 millimeters of which the tail was .484.

Bufo americanus americanus Holbrook. AMERICAN TOAD.—This toad was reported by Williamson (1907, 37) from Heyden. It was found by our party in the vicinity of Maclellan, on St. Joseph Island,

at Laird, Lake George, Black Hole Lake near Desbarats, and at Gros Cap. Twenty-six specimens (also some newly metamorphosed, and tadpoles) were collected. The former lot was lent to another museum some years ago and unfortunately is not at present available for examination.

Toads were often heard in song at evening from the date of our arrival on June 1 until July 17 (the latter date was recorded by Professor Coventry after the writer's departure). The recorded temperature range at which song was heard was from 51° to 67.5° F. Newly transformed specimens were found at Lake George on July 9. A lot of tadpoles and metamorphosing stages were taken at Black Hole Lake on June 29. In six of these all four limbs had appeared and in two more the front limbs were near to appearing; the remainder were still larval.

Some of the adult specimens collected showed much red on the under surface of the thighs and pelvic region and on the sides of the body.

Hyla crucifer (Wied). SPRING PEEPER.—The peeper was a common frog in the general area about Maclellan; we took it also at Lake George, at Black Hole Lake near Desbarats, and at Gros Cap. From June 1 until at least the 25th it was often heard calling at night with air temperatures from 44° to 63° F. Of seventeen specimens collected and measured, only six were females. The average head-body length of the males was 23.3 millimeters and that of the females 23.8. The males had an average head length of .325 and hind-leg-to-heel length of .837; for the females the corresponding figures are .331 and .844.

A newly hatched larva was taken on June 5 from a woodland pond near Maclellan; also two others of 7 and 8 millimeters. A lot of twenty-six tadpoles taken from a partly shaded pond south of camp on July 6 had a body length ranging from 8.5 to 10 millimeters. All had lost the terminal portion of the tail. The hind limbs ranged in development from small buds to advanced growth, and four or five specimens were nearing the appearance of the front limbs. These tadpoles were peculiar in being of an intense inky black which even suffused the normally clear areas of the tail membrane.

Rana catesbeiana Shaw. BULLFROG.—This frog was reported by Williamson (1907, 135) as "very common at the lower end of Stony Lake." Stony Lake is not named on the district map.

Rana clamitans Latreille. GREEN FROG.—We collected this frog in the general area about Maclellan, on St. Joseph Island, at Black Hole Lake, Caribou Lake, Point aux Pins, and at Gros Cap. The eighteen specimens collected are divided equally as to sexes. For the males we find an average head length of .377 of the head-body length with

extremes of .366 and .394; for the females these figures are .366, .344 and .384. Tympanum to head proportions for the males average .325 with extremes of .246 and .400; for the females .288, .260 and .314, for specimens of 60 millimeters or more. The hind-leg-to-heel length averages .909 for all specimens, with extremes of .802 and .979.

One female full of eggs was taken on June 9 in a roadside ditch near MacLennan. Tadpoles were common in St. Joseph Channel and were also taken in a lake on St. Joseph Island. The first metamorphosing specimen was noted on June 22.

Rana palustris Le Conte. PICKEREL FROG.—Reported by Williamson (1907, 136) who took one specimen at Heyden.

Rana pipiens Schreber. LEOPARD FROG.—The leopard frog, next to the wood frog, was the commonest *Rana*. It was reported from Heyden by Williamson (1907, 135). It was collected by our party at MacLennan, St. Joseph Island, Lake George, Black Hole Lake near Desbarats, north of Portlock, near Little Rapids, and at Point aux Pins. Twenty-three specimens were collected. The largest male is 72.6 and the largest female 89 millimeters. The average head length is .340 of the head-body length with extremes of .311 and .383. The corresponding figures for the hind-leg-to-heel length are .954, .985 and 1.023. The shorter folds on the back between the dorsolaterals are moderately to well developed in all specimens and are from two to four in number, but often confused. The dorsolateral folds pass over the eye. The numbers of joints of the fourth toe free of web occur with the following frequency: 2 joints free .478, 2½ joints free .304, 3 joints free .217. The ground colour varied from green to brown and the spots in size and spacing; the banding of the femur and tibia was both complete and broken, and the posterior femoral vermiculation was variable but never broken completely into small isolated spots. The spot on the snout was present in thirteen specimens.

Williamson makes the following comments on five specimens collected at Heyden. "They are all small adults the coloration of which is close to that described as *Rana virescens brachycephala* by Cope, having no longitudinal band on the femur and having the tibial cross bars incomplete, also yellow bordered dorsal spots. However, the head is longer than in typical specimens of the variety *brachycephala*, and the muzzle is as acuminate as in most specimens of the variety *R. p. pipiens* and the size of the spots correspond with the latter variety."

Tadpoles were common in Maskinonge Bay. A lot of fifteen tadpoles collected there on June 5 ranged between 10 and 19 millimeters in

length with no trace of limb buds showing. Subsequent collections were as follows: June 13, 44 tadpoles of from 23 to 42 mm.; June 26, 32 tadpoles of from 42 to 60 mm. These lots no doubt contained products of several spawnings. Metamorphosing specimens were present in a muddy pasture pond near MacLennan on July 2.

***Rana septentrionalis* Baird.** MINK FROG.—Reported by Williamson (1937, 136) from Heyden, where four specimens, three males and a female, were taken.

***Rana sylvatica* Le Conte.** WOOD FROG.—This, the commonest *Rana*, was reported by Williamson (1907, 137) from Searchmont. It was collected by our party in the general area about MacLennan, at Laird, Lake George, St. Joseph Island, Pine Island, Black Hole Lake near Desbarats, Little Thessalon River west of Little Rapids, and at Gros Cap.

A hind-leg-to-heel length in excess of the head-body length occurs in six (6.8 per cent) of the eighty-seven specimens of all sizes collected in Algoma District as compared with 10.6 per cent for the province of Ontario at large. A hind-leg-to-heel length equal to the head-body length occurs in one (included among the short-legged specimens below). The following brief summary of characters noted in the Algoma material is from sixty-five adult specimens, thirty-two males and thirty-three females.

Short-legged specimens

Proportional measurements (59 specimens)

Hind-leg-to-heel length.....	average	.918	extremes	.842, 1.000*
Tibia length.....	"	.574	"	.446, .561
Head length.....	"	.341	"	.308, .365
Foot length.....	"	.738	"	.655, .820
Proportion of ear to eye.....	"	.644	"	.500, .780

Frequency of occurrence of other characters (58 specimens)

Extra folds between dorsolaterals well developed in.....	.517 (30 specimens)
" " " weak or fragmentary in.....	.413 (24 ")
" " " absent in.....	.068 (4 ")
Skin of back rough in.....	.241 (15 ")
" " medium in.....	.603 (35 ")
" " smooth in.....	.137 (8 ")
Joints of fourth toe free of web—two in.....	.086 (5 ")
" " two plus in.....	.224 (13 ")
" " three in.....	.689 (40 ")
Light dorsal stripe present in.....	.034 (2 ")

*Should we exclude this specimen from the short-legged group, the next longest would be .997.

Long-legged specimens

Proportional measurements (6 specimens)

Hind-leg-to-heel length.....	average	1.018	extremes	1.005, 1.040
Tibia length.....	"	.549	"	.542, .562
Head length.....	"	.349	"	.325, .369
Foot length.....	"	.803	"	.759, .853
Proportion of ear to eye.....	"	.642	"	.591, .682

Frequency of occurrence of other characters (6 specimens)

Extra folds between dorsolaterals well developed in.....	.333	(2 specimens)
" " " weak or fragmentary in.....	.333	(2 ")
" " " absent in.....	.333	(2 ")
Skin of back rough in.....	.166	(1 ")
" " medium in.....	.500	(3 ")
" " smooth in.....	.333	(2 ")
Joints of fourth toe free of web—two in.....	.166	(1 ")
" " " two plus in.....	.666	(4 ")
" " " three in.....	.166	(1 ")

Light dorsal stripe absent in all.

It will be seen from the above summary (and would be more apparent if characters of individual specimens were tabulated) that the leg length shows a fairly smooth gradient from short to long; all other measurements overlap. The ear averages larger in the short-legged specimens, and although the smallest ears occur in this group the largest ears also occur in it, and ears of over 70 per cent of the eye occur in nine (.152) of these, but not at all in the long-legged group. While a rough skin occurs more frequently in the short-legged specimens and a smooth skin in the long-legged, this may be either a local condition or an accidental result of the very small number of long-legged specimens in the series, since it is the reverse of our findings in a larger series collected widely over Ontario. The exactly even division among the long-legged specimens as to development of the shorter folds between the dorsolaterals might be assignable to either of the same causes (in our larger series from other localities also the frequency of absence of these folds is .366, and of strong development .122 in long-legged specimens). The foot averages longer in the long-legged specimens, but the lower extreme in these widely overlaps the upper in the short-legged specimens. An outer sole tubercle was present in all, except that in two specimens, a long-legged and a short-legged, it was absent on one foot. The internasal space was wider than the interorbital in all.

With leg-length presenting as smooth a gradient as it does, and with all other characters examined (characters that were selected because they have been used in the literature by various authors in describing, or

distinguishing between, *R. sylvatica* and *cantabrigensis*) overlapping widely as between the two groups, there seems to be no very good reason in the present state of our knowledge for recognizing two forms among the Algoma wood frogs, or for distinguishing them from wood frogs collected at other Ontario localities.

A lot of thirty-three tadpoles collected on June 8 in a mossy pond partly shaded by scrub willow, near Maclellan, ranged from 24.6 to 37.6 millimeters in length; the limb buds (flexed) were from 1 to 2.3 millimeters. A lot of seventeen tadpoles taken on the same day from an open, unshaded pasture field pond nearby ranged in length from 36.5 to 45.3 millimeters; the limb buds (flexed) were from 2 to 8 millimeters. On July 2 metamorphosis was in progress in both of these ponds. The first metamorphosing specimens of the season were seen on June 19 in another open pond that was then drying up, and many young frogs were leaving the water.

A series of eight tadpoles taken in a pond in a gravel pit at Black Hole Lake near Desbarats were unusual in attaining a very large growth, 48.8 to 60.3 millimeters in length; the hind limbs (flexed) ranged from 6.7 to 11 millimeters although the tadpoles were completely larval. The dorsal fin rose abruptly to maximum height close to the base of the tail, giving the appearance of a greatly increased tail fin depth. Actually, the tail fin depth was in about normal proportion, averaging .284 of the total length of the tadpole with extremes of .253 and .323. The largest tadpole from any other Algoma locality was 45.3 millimeters. The length of the largest *sylvatica* tadpole reported by Wright (1929, 27) was 49.8 millimeters.

LITERATURE CITED

- AGASSIZ, L. 1850. Lake Superior, its physical character, vegetation and animals. Boston.
- COPE, E. D. 1889. The batrachia of North America. Bull. U.S. Nat. Mus. No. 34.
- KAUFFELD, C. F. 1937. The status of the leopard frogs, *Rana brachycephala* and *Rana pipiens*. Herpetologica 1: 84-87.
- RUTHVEN, A. G., CRYSTAL THOMPSON, and HELEN T. GAIGE. 1928. The herpetology of Michigan. Michigan Handbook Ser., Univ. Mich. Mus., no. 3.
- WRIGHT, A. H. 1929. Synopsis and description of North American tadpoles. No. 2756.—Proc. U.S. Nat. Mus. 74: Art. 11, pp. 1-70.
- WILLIAMSON, E. B. 1907. A collecting trip north of Sault Ste. Marie, Ontario. The Ohio Nat., 7: 129-148.

A LIST OF SPIDERS COLLECTED IN THE SAULT STE. MARIE
REGION, ONTARIO

By

T. B. Kurata

Field work in the Sault Ste. Marie region during the summer of 1931 was organized primarily to study and collect vertebrates. However Mr. E. B. S. Logier and others found it possible to collect a number of spiders. Representatives of ten families of Araneae have been identified and listed below.

DRASSIDAE

- Drassus neglectus* Keys. Maclellan: July 6, 1 ♀.
Drassodes robustus Em. Maclellan: July 6, 1 ♀.
Gnaphosa gigantea Keys. Point aux Pins: July 13, 1 ♀.
Zelotes atra H. Maclellan: July 6, 1 ♀.
“ *depressa* Em. Maclellan: July 6, 1 ♀.

THERIDIIDAE

- Crustulina guttata* (Wilder.) Maclellan: July 6, 1 ♀.
Enoplognatha marmorata H. Maclellan: July 8, 1 ♀.
Theridion spirale Em. Point aux Pins: July 26, 4 ♀ ♀.

LINYPHIIDAE

- Linyphia pusilla* Sund. Laird: July 13, 1 ♀; July 16, 1 ♀.

ARGIOPIDAE

- Araneus arabescus* Walck. Point aux Pins: July 13, 1 ♀.
“ *cornutus* H. Maclellan: July 25, 1 ♀.
“ *trifolium* H. Maclellan: July 25, 1 ♀.
Tetragnatha extensa L. Lake George: July 9, 1 ♂. Laird: July 19, 2 yg.
“ *laboriosa* H. Lake George: July 19, 1 ♀. Laird: July 1 yg.
“ *pallidula* Bks. Maclellan: July 16, 1 ♀.

THOMISIDAE

- Philodromus pernix* Blackw. Maclellan: July 6, 1 yg.
Thanatus coloradensis Keys. Lake George: July 9, 1 yg.
Tibellus duttoni H. Lake George: June 19, 1 ♀.

CLUBIONIDAE

- Clubiona riparia* Koch. Laird: July 13, 1 yg.
Micaria gentilis Bks. Maclellan: July 16, 1 yg.

AGELENIDAE

- Agelena naevia* Walck. Maclellan: July 16, 1 yg.

PISAUROIDAE

- Dolomedes triton sexpunctatus* H. Laird: June 19, 1931, 3 yg.,
 A. F. Coventry.

LYCOSIDAE

- Lycosa pratensis* Em. Gros Cap: July 13, 1 ♀.
Pardosa milvina H. Laird: June 19, 1 ♀.
 " *modica* Blackw. Lake George: July 9, 3 ♀ ♀.
 " *moesta* Bks. Maclellan: July 6, 1 ♀.
 " *xerampelina* Keys. Maclellan: July 16, 1 ♀.
Pirata arenicola Em. Lake George: June 9, 2 ♀ ♀.
 " *insularis* Em. Point aux Pins: July 13, 2 ♀ ♀.

SALTICIDAE

- Peckhamia picata* H. Laird: July 3, 1 ♀.
Phidippus purpuratus Keys. St. Joseph Id.: June 22, 1 ♀.
Tutelina elegans H. Maclellan: June 18, 1 ♂.

CONTRIBUTIONS
OF THE
ROYAL ONTARIO MUSEUM OF ZOOLOGY

This series contains reports of Museum studies, including faunal surveys. Except where otherwise stated the price is twenty-five cents a copy.

1. A Faunal Survey of the Lake Nipigon Region, Ontario, by J. R. Dymond, L. L. Snyder and E. B. S. Logier. 58 pages.
2. A Faunal Survey of the Lake Abitibi Region, Ontario, by the staff of the Royal Ontario Museum of Zoology. 46 pages.
3. A Faunal Investigation of King Township, York County, Ontario, by L. L. Snyder and E. B. S. Logier. 42 pages (out of print).
4. A Faunal Investigation of Long Point and Vicinity, Norfolk County, Ontario, by L. L. Snyder and E. B. S. Logier. 120 pages (out of print).
5. Some Account of the Amphibians and Reptiles of British Columbia, by E. B. S. Logier. 26 pages (out of print).
6. A Study of the Sharp-tailed Grouse, by L. L. Snyder. 66 pages.
7. The Passenger Pigeon in Ontario, by Margaret H. Mitchell. Records of the history of the now extinct wild pigeon (*Ectopistes migratorius*) in Ontario. Paper, \$1.00. Cloth, \$1.50. 181 pages.
8. The Distribution of Breeding Birds in Ontario, by James L. Baillie, Jr., and Paul Harrington. 134 pages.
9. Some Freshwater Fishes of British Columbia, by J. R. Dymond. 14 pages.
10. The Birds of the Lake St. Martin Region, Manitoba, by T. M. Shortt and Sam Waller. 51 pages.
11. Baird's Sparrow, by B. W. Cartwright, T. M. Shortt and R. D. Harris. 44 pages.
12. Ontario and its Avifauna, by L. L. Snyder, and The Museum's Bird Collection, by J. L. Baillie. 14 pages.
13. Birds of Algonquin Provincial Park, Ontario, by D. A. MacLulich. 47 pages.
14. A Faunal Investigation of Western Rainy River District, Ontario, by L. L. Snyder. 57 pages.
15. The Fishes of the Ottawa Region, by J. R. Dymond. 43 pages.
16. The Birds of the Vicinity of Lake Nipissing, Ontario, by W. E. Ricker and C. H. D. Clarke. 25 pages.
17. The Summer Birds of Yakutat Bay, Alaska, by T. M. Shortt. 30 pages.
18. History of the Royal Ontario Museum of Zoology, by J. R. Dymond. 52 pages.
19. A Faunal Investigation of Prince Edward County, Ontario, by L. L. Snyder, E. B. S. Logier, T. B. Kurata, F. A. Urquhart, and J. F. Brimley. 123 pages.
20. The Blattaria and Orthoptera of Essex County, Ontario, by F. A. Urquhart. 32 pages.
21. A Faunal Investigation of the Sault Ste. Marie Region, Ontario, by L. L. Snyder, E. B. S. Logier and T. B. Kurata. 68 pages.

(3) 261

9063

1223

